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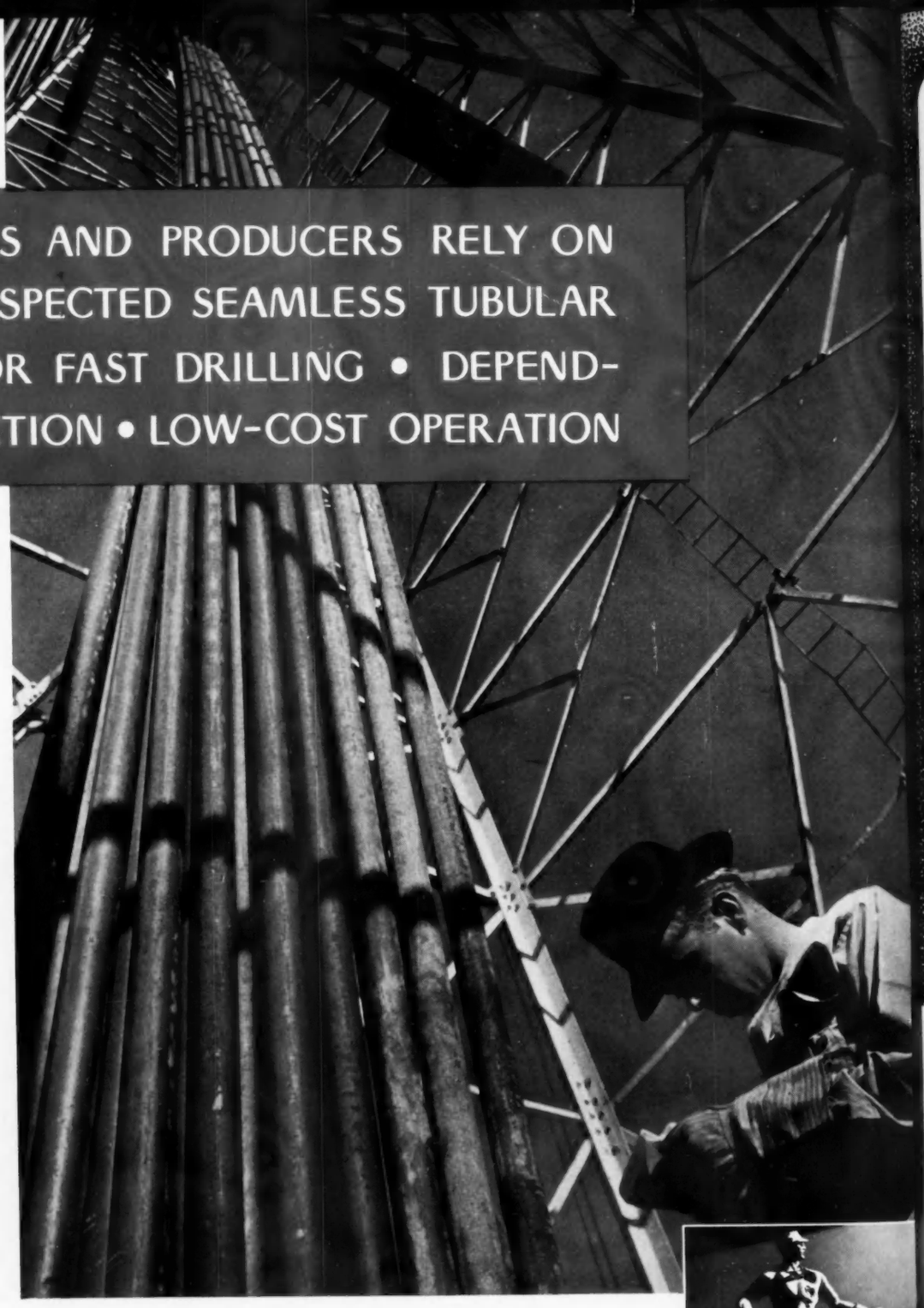

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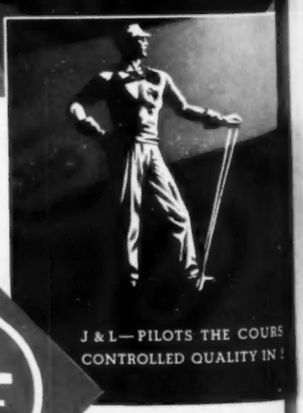

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CASE STUDY NO. 404

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METHOD: *Set Baker Cement Retainer above Casing Split and Do Squeeze Job. (A Cement Bridge was Placed at Top of Producing Zone.)*

RESULT: *100% Successful.*

• DETAILS •

Field: Salem, Illinois

Depth of Well: 1855'

Depth Retainer Set: 1760'

Breakdown Pressure: 800#

Final Pressure: 1000#

Number of Sax Mixed: 30

Number of Sax Put Away: 30

How Cement Discharged: through Casing Split in Shoe Joint.

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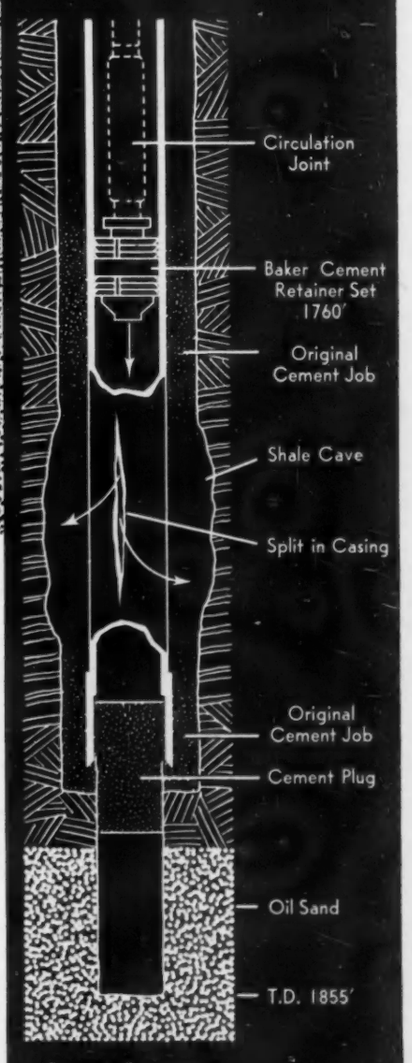
BAKER SAVE A WELL CEMENT RETAINER



Squeeze Cementing with Baker Cement Retainer to Repair Casing Split

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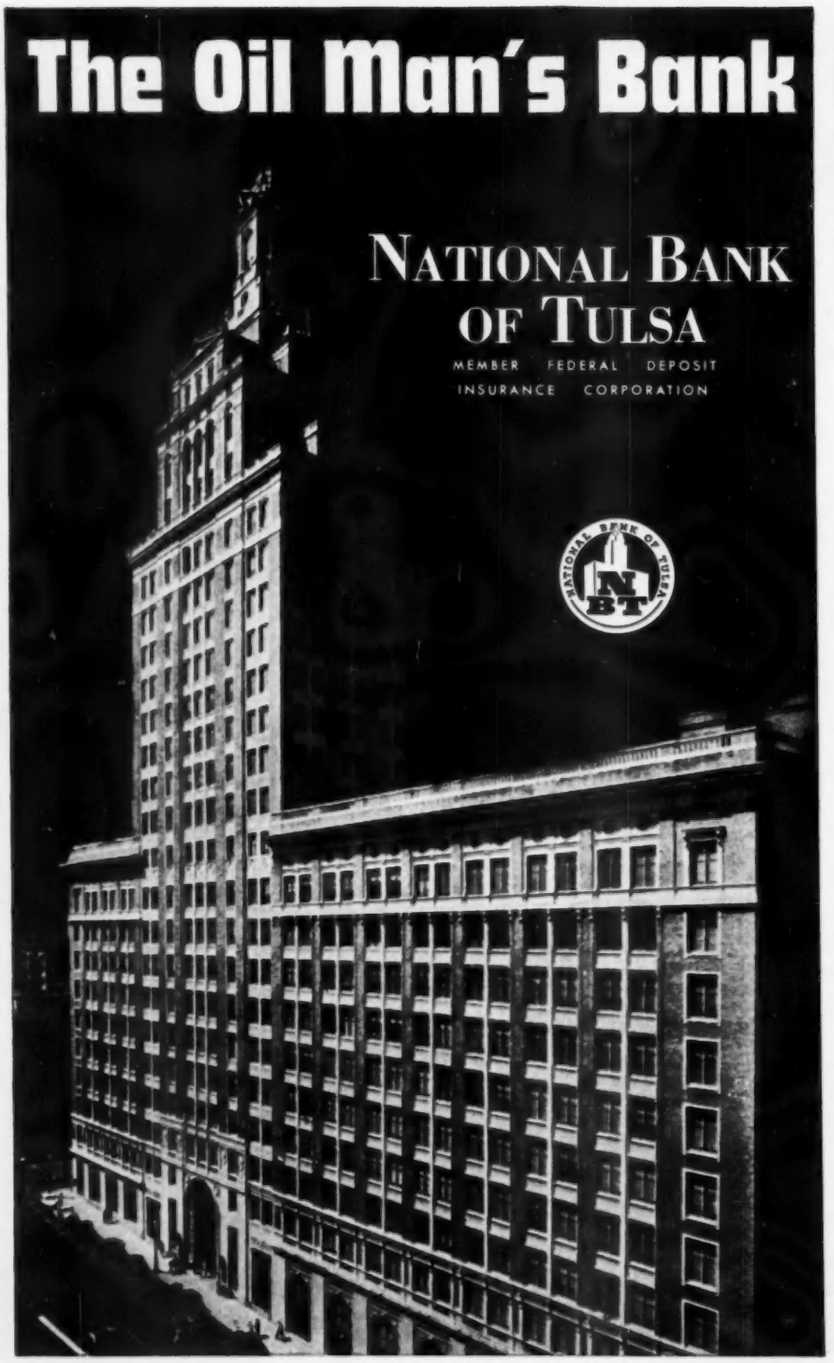
BAKER CEMENT RETAINER



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LOOKING AHEAD

WITH THE EDITOR

Locating Powers.
Southwest A.P.I.

THE important problem of locating a central pumping power on a lease is approached with a new method, involving application of graphostatics, in an article by Sylvain J. Pirson, head of the petroleum and natural gas department of The Pennsylvania State College. This article, together with very illuminating sketches, will appear in an early issue.

The method involves application of dynamoter cards to the study of central pumping power problems and particularly to this application in the reduction of pumping costs by permitting reduction to a minimum the power required.

★

NEXT week is the date for the Southwestern District meeting of the American Petroleum Institute Division of Production, and the forthcoming issue of THE OIL WEEKLY will carry abstracts of all papers presented at the meeting.

Some of the subjects to be discussed will be gravel packing oil wells; paraffin removal from tubing in flowing wells; developments of changing concepts of the fundamentals of oil production; supervisory training; artificial lift methods; oil development and production practices; causes, prevention and recovery of stuck drill pipe; acidization in limestone formations; and other topics.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

THE OIL WEEKLY

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Member Audit Bureau of Circulation
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The Oil Man's Calendar

MAR. 28–29	American Petroleum Institute, Southwestern District, Division of Production, Houston, Texas.
–31 Apr. 2	Western Petroleum Refiners Association Wichita, Kansas.
APR. 9–11	Society of Exploration Geophysicists, Chicago.
10–12	American Association of Petroleum Geologists, Chicago.
–11	Society of Economic Paleontologists and Mineralogists, Chicago.
	Petroleum Fluid Metering Conference, Petroleum Division, A.S.M.E., Norman, Okla.
11–12	American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.
16–18	Southwestern Gas Measurement Short Course, Norman, Okla.
18–19	National Petroleum Association, Semi-Annual Meeting, Cleveland, Ohio.
26–27	Petroleum & Natural Gas Conference, State College, Pa.
MAY 1– 3	Petroleum Industry Electrical Association, Dallas, Texas.
6–10	American Gas Association, Natural Gas Section, Houston.
15–17	Natural Gasoline Association of America, Tulsa.
18–25	International Petroleum Exposition & Congress, Tulsa.
27–31	American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Texas.
30–31 June 1	National Oil Scouts and Land Man's Association, Hot Springs, Ark.
JUNE 1	Illinois-Indiana Petroleum Association, Robinson, Ill.

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Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

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THE OIL WEEKLY

MARCH 25, 1940

VOLUME 97 NUMBER 3

The Week's Panorama

TO the problem of a 15,000,000-barrel surplus of gasoline is now added that of crude production materially in excess of current market requirements.

Stocks of both gasoline and crude oil showed further substantial increases when the latest weekly statistics of the industry were compiled.

First Quarter Profits . . . . .

Along with industry in general, the oil business likely will have materially better earnings in the first quarter of 1940 than in the similar period of 1939.

Because of improvement in both volumes of business and realized prices, the industry as a whole is expected to show around 25 percent more profit, although results will vary considerably among companies.

Industrial Activity . . . . . .

Despite the recession of business activity since the end of 1939, industrial production as measured by the Federal Reserve Board index probably will average around 110 for the first three months of 1940, as compared with 99 percent of the 1923-1925 average in the corresponding months of 1939.

Lube Exports . . . . . .

Exports of lubricants from the United States may be curtailed in consequence of the British government's plan to limit granting of the navicerts needed to permit passage of shipments through the war zones to Belgium, the Netherlands, and Denmark, where lube stocks are abnormally large, according to the British. Agreements with those countries on limiting oil imports are sought by Britain, which already has worked out similar agreements with Norway and Sweden. The British apparently suspect that re-shipping to Germany has been partly responsible for the sharp increase in shipments of American lubricating oils since last September.

Oil Equipment Exports . . . .

Oil field and refinery equipment manufacturers in the United States are doing relatively good volumes of export business, part of which they attribute to war in Europe. The war has forced some South American and other countries to turn to the United States for machinery, pipe, and so forth formerly purchased in Germany and England. Argentina, for example, is a good prospect, following shutting off of supplies formerly bought largely from Germany. Increased business is expected from Brazil and Colombia, although slowing down of development in Venezuela lately has affected equipment shipments adversely.

Gasoline Prices . . . . . .

Retail prices of gasoline on March 1, 1940, averaged 13.34 cents a gallon, according to the American Petroleum Institute, as compared with 13.43 cents on February 1, 1940, and 13.04 cents on March 1, 1939.

Highway Safety . . . . . .

Automotive engineers have made motor vehicles remarkably safe, and advances in highway safety have materially reduced fatal accidents in relation to vehicle mileage.

Scientific traffic studies are expected ultimately to make the highways themselves as nearly accident-proof as possible, although development of better drivers may be a difficult problem.

It is contemplated that an important factor in highway safety will be scientifically designed express roads where traffic is dense.

Oil Industry Affected . . . . .

The oil industry probably has not taken as much interest in highway safety and highway construction as its welfare would justify.

Automobiles carry 91 percent of travel in the United States, and trucks carry 6 percent of all freight ton miles.

Vehicle mileage now exceeds 250 billions annually, but substantial potential traffic doubtless is kept off the highways through fear of accidents.

It has been estimated that improved and enlarged highway systems and increased safety would result eventually in a doubling of travel.

Gasoline Taxes . . . . . .

It is important for the oil industry to work toward holding down gasoline taxes and against diversion of gasoline taxes from highway purposes. But the industry is a major beneficiary of money spent wisely for enlarging and improving highways and making them safe. A doubling of mileage would mean a similar expansion of the oil industry's business.

Gasoline Substitutes . . . . . .

In the efforts in Great Britain to find substitutes for gasoline, the most satisfactory results have been obtained with compressed illuminating gas, contained in cylinders that are carried on the motor vehicle or in trailers. Both spark ignition and compression engines have been adapted to the use of illuminating gas, although with loss of 10 to 30 percent in motor efficiency. Providing and carrying needed high pressure cylinders are important difficulties . . . Less encouraging have been experiments with gas generated from solid fuels burned in a gas producer on the vehicle.

Extension of Good Results of First Quarter Promised

By L. J. LOGAN, Associate Editor

THE oil industry has had a quite satisfactory initial quarter in 1940, and continued good results generally are in prospect for the second quarter.

Demand for petroleum products has been remarkably large, despite curtailed exports; and inventories generally have been low in relation to prevailing demand, with the result that prices have been comparatively good, although surplus stocks of gasoline have depressed the market for that important product.

The industry has been doing large volumes of business at relatively good prices, therefore, and earnings have been favorable; and similar results are promised for the second quarter of the year.

Demand Breaks Records

So far this year, the markets have been absorbing all-time record quantities of practically all petroleum products.

Exports have lagged, apparently because of the wars abroad, but declines in foreign shipments have been greatly outweighed by the extraordinary gains in domestic consumption.

Figures lately released by the Bureau of Mines covering January revealed a surprisingly great demand for petroleum and petroleum products in the initial month of 1940.

Total demand for all United States oils was 13.7 percent larger than in January, 1939.

Total exports of 10,728,000 barrels were 17.3 percent smaller than the shipments of 12,971,000 barrels in January, 1939; as crude oil exports were down 6.1 percent to 4,202,000 barrels, while shipments of refined products were off 23.2 percent, to 6,526,000 barrels from 8,494,000 in January last year.

Total domestic demand in January, 1940, having amounted to 115,991,000 barrels, was 17.8 percent larger than in January, 1939.

February and March

Although figures are not yet available on results in February and March, it is indicated that export and domestic demands continued along the trends that prevailed in January, the former lagging and the latter proceeding at high levels.

Economists who have watched production and stocks of gasoline and other products have clung so far to their earlier opinions that this year would bring substantial gains in total demand, despite possible curtailed exports.

Gasoline demand in the United States is still expected, for instance, to continue around 5 percent larger than in 1939; although it is anticipated that total demand will be up by a smaller percentage, because of reduced shipments abroad.

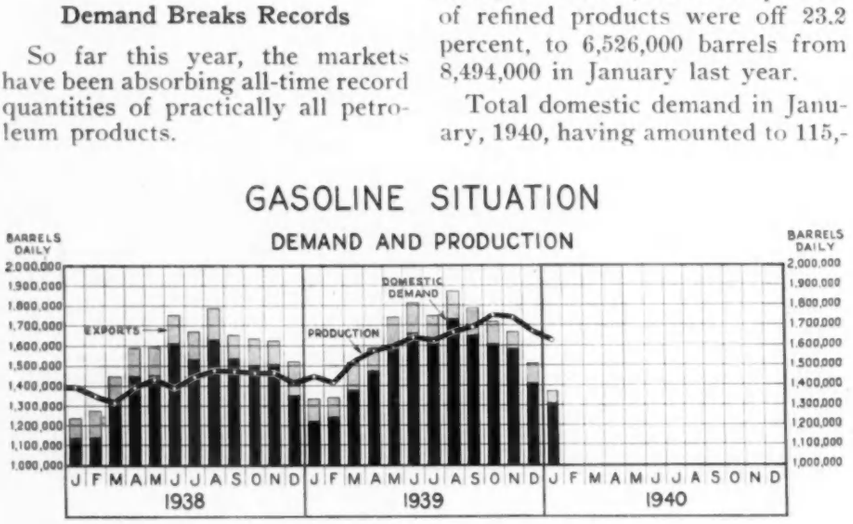
In its forecast for February, 1940, the Bureau of Mines predicted that the average daily market demand for gasoline would be 4 percent larger than in February, 1939; but curtailed exports were foreseen.

Similarly, the bureau forecast for March, 1940, an increase of 6.1 percent in domestic demand for gasoline but also a 21.6 percent decrease in exports, which indicated that total demand for gasoline would be 3.5 percent larger than in March, 1939.

Present Difficulties

Excessive crude oil production and burdensome gasoline stocks currently are the principal problems of the industry. The wells of the country lately have been producing more crude than the refineries have been using, even though the plants have been converting some crude into unneeded

GASOLINE SITUATION



gasoline. These facts have been evidenced by additions to the stocks of crude oil as well as gasoline.

Crude Production High

Crude oil production at 3,890,050 barrels daily in the week ended March 16 was within 20,000 barrels of the all-time peak of last August and exceeded by 340,000 barrels the indicated average daily market demand for March.

Crude Stocks Rise

Crude stocks have mounted precipitously under the liberalized allowables of March. The 1,636,000-barrel addition in the week ended March 9 followed one of 3,290,000 barrels in the preceding week. The total increment of 4,926,000 barrels in the two weeks represented average additions of 352,000 barrels daily.

Of the 4,926,000-barrel addition, 3,766,000 barrels, or about three fourths of the total, occurred in Texas, under that state's "testing of the markets." Having questioned whether the state was allocated a fair share of the national market in the Bureau of Mines estimates of demand, Texas conservation officials deliberately set March allowables above the federal estimates; and that action encouraged other states likewise to exceed the bureau figures.

At the Texas proration hearing March 20 it was indicated, however, that the state would cut its allowables back within the Bureau of Mines estimates of demand in April; and that attitude in Texas was expected to encourage other states to do likewise.

Illinois Situation

Illinois is, therefore, the principal problem in the crude production situation. Having climbed above 450,000 barrels daily, Illinois output is about 125,000 barrels in excess of current market demand, as estimated by the Bureau of Mines. However, the market for Illinois crude has grown steadily along with the expansion of production; and it may be questioned whether the bureau figures are too conservative, inasmuch as reports indicate that comparatively little Illinois crude has to go for less than posted prices to find buyers. Moreover, unless new fields or new pay zones change the picture, Illinois production is expected to hit its peak and begin declining before the year's high in petroleum consumption is reached. In fact, some Illinois operators are of the opinion that the state will pass its production peak as early as June, unless unexpected discoveries are made, as the prolific Devonian zone already has been fairly well devel-

January Oil Demand Sharply Higher in 1940 than in 1939

Figures indicate barrels and are from Bureau of Mines

ITEM	JANUARY 1939	JANUARY 1940	Percent Change
SUMMARY—			
Total Demand	111,454,000	126,719,000	+ 13.7
Daily average	3,595,000	4,088,000	+ 13.7
Exports:			
Crude petroleum	4,477,000	4,202,000	— 6.1
Refined products	8,494,000	6,526,000	— 23.2
Total exports	12,971,000	10,728,000	— 17.3
Domestic Demand:			
Total domestic demand	98,483,000	115,991,000	+ 17.8
Daily average	3,177,000	3,742,000	+ 17.8
TOTAL DEMAND FOR PRODUCTS			
Motor Fuel:			
Domestic	37,767,000	40,370,000	+ 6.9
[1]Exports	3,638,000	2,274,000	— 37.5
Total	41,405,000	42,644,000	+ 3.0
Aviation Gasoline (included above):			
Domestic	[4]	554,000	[4]
Exports	553,000	155,000	— 72.1
Total	553,000	709,000	[4]
Kerosene:			
Domestic	5,980,000	7,842,000	+ 31.1
Exports	810,000	191,000	— 76.4
Total	6,790,000	8,033,000	+ 18.3
Gas Oil and Distillate Fuels:			
[2]Domestic	16,963,000	22,787,000	+ 34.3
Exports	1,675,000	1,549,000	— 7.5
Total	18,638,000	24,336,000	+ 30.6
Residual Fuel Oils:			
[2]Domestic	28,443,000	32,148,000	+ 13.0
Exports	1,379,000	1,139,000	— 17.4
Total	29,822,000	33,287,000	+ 11.6
Lubricants:			
Domestic	1,609,000	2,054,000	+ 27.7
Exports	851,000	1,068,000	+ 25.5
Total	2,460,000	3,122,000	+ 26.9
Wax (thousands of pounds):			
Domestic	20,642,000	35,187,000	+ 70.5
Exports	18,342,000	21,142,000	+ 15.3
Total	38,984,000	56,329,000	+ 44.5
Coke (short tons):			
Domestic	106,000,000	137,800,000	+ 30.0
Exports	10,500,000	16,600,000	+ 58.1
Total	116,500,000	154,400,000	+ 32.5
Asphalt (short tons):			
Domestic	192,900,000	149,500,000	— 22.5
[3]Exports	3,300,000	19,300,000	+484.8
Total	196,200,000	168,800,000	— 13.9
Road Oil:			
Domestic	173,000	132,000	— 23.7
Miscellaneous:			
Domestic	173,000	240,000	+ 38.7
Exports	5,000	40,000	+700.0
Total	178,000	280,000	+ 57.3

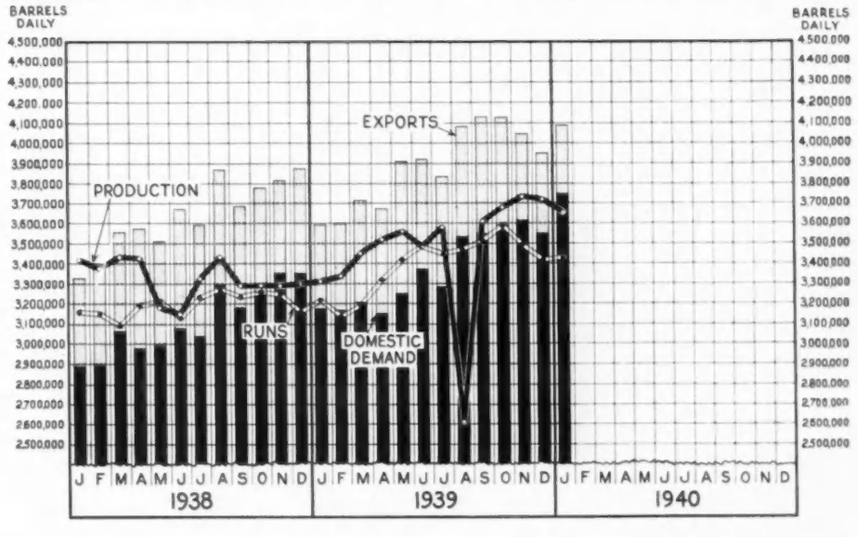
[1] Includes benzol—74,000 barrels in January 1940.
[2] Includes changes in terminal stocks and transfers of crude oil for fuel-oil consumption east of California (all classified as gas oil and distillate fuels) carried back to Jan. 1939.
[3] Beginning January 1940, includes both unmanufactured and manufactured asphalt—only unmanufactured previously shown.
[4] Not Available.

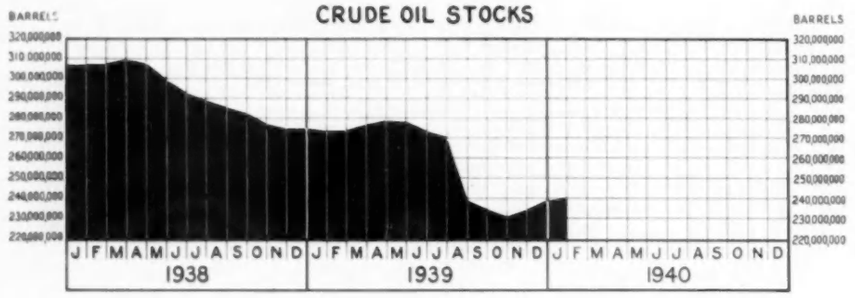
Continued Good Demand for Gasoline Foreseen in Bureau of Mines Forecasts in Recent Months

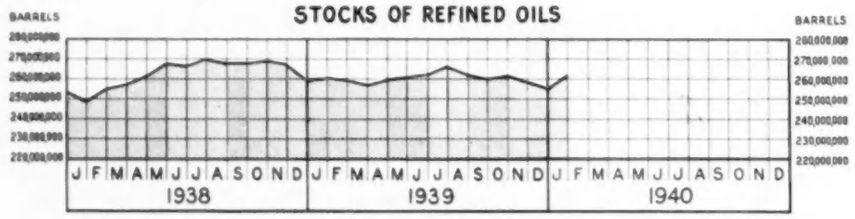
(Barrels)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
January:				
January, 1940, forecast	110,660,000	39,500,000	3,800,000	43,300,000
January, 1939, actual	103,745,000	37,767,000	3,638,000	41,405,000
Change from year ago	+6.7%	+4.6%	+4.5%	+4.6%
February:				
February, 1940, forecast	102,340,000	37,300,000	2,800,000	40,100,000
February, 1939, actual	92,248,000	34,595,000	2,909,000	37,504,000
Change from year ago	+10.9%	+7.8%	—3.9%	+6.9%
March:				
March, 1940, forecast	108,520,000	45,100,000	3,400,000	48,500,000
March, 1939, actual	103,887,000	42,520,000	4,336,000	46,856,000
Change from year ago	+4.5%	+6.1%	—21.6%	+3.5%

DEMAND FOR ALL U.S. OILS - CRUDE OIL PRODUCTION - REFINERY RUNS







oped. At the same time, however, it is generally conceded that the actual future of Illinois production is not predictable; that the output may be bolstered or increased by additional potential oil zones that await exploration.

In the week ended March 16, gasoline stocks in the United States mounted above 100,000,000 barrels for the first time in history. The present inventory is 14,000,000 barrels greater than that held at this time last year, although the equivalent of the comparatively large stocks of a year ago doubtless would have been adequate for handling this year's business, as the total demand for gasoline is not up greatly.

As compared with the actual stocks of over 100,000,000 barrels, economists have estimated that 82,000,000 to 85,000,000 barrels of gasoline would be adequate for entering the spring-summer season on March 31. It is indicated, therefore, that gasoline stocks are around 15,000,000 barrels larger than necessary. And this surplus obviously is the principal cause of the present weaknes of the gasoline market.

Although domestic consumption of gasoline has been remarkably large, exports have been disapointing since last summer. The shipments to foreign countries were above 1938 levels in September, 1939, but subsequently have been smaller than one year previously, as shown by accompanying figures.

Month	Barrels Gasoline Exported
September, 1938	3,528,000
September, 1929	4,232,000
Change	+19.9%
October, 1938	4,526,000
October, 1939	3,443,000
Change	—23.9%
November, 1938	3,698,000
November, 1939	2,560,000
Change	—30.8%
December, 1938	5,423,000
December, 1939	3,136,000
Change	—42.2%
January, 1939	3,638,000
January, 1940	2,274,000
Change	—37.5%
5 Mos., Sept. 1938—Jan 1939	20,813,000
5 Mos., Sept. 1939—Jan. 1940	15,645,000
Change	—24.9%

Even aviation gasoline is being exported in relatively small quantities, although it was generally expected that the wars would cause large demand for that product in Europe. In January, 1940, the exports of aviation gasoline totaled only 155,000 barrels, or 72 percent less than the 553,000 barrels shipped in January, 1939.

Total demand for gasoline in January, 1940, latest month for which figures are available, was 3 percent larger than in January, 1939. While the exports were off 37.5 percent, domestic consumption was up 6.9 percent, as indicated in accompanying tables.

Weather Helps Heating Oils

Stimulated by severe weather, demand for heating oils soared to unprecedented levels in the first month of this year. Total demand for gas oil and distillate fuel was 30 percent greater than in January, 1939, despite slightly smaller exports, as domestic consumption was up 34 percent. At the middle of March stocks of those light oils were 3,000,000 barrels or 12 percent, smaller than year previously.

Kerosene demand was 18 percent greater in January, 1940, than in January, 1939, although exports were only one fourth as large, the domestic consumption having shown a 31 percent gain. Stocks of kerosene, having been reduced in meeting large demand, are 27 percent smaller than a year ago.

Total demand for residual fuel oil was 12 percent larger in January, 1940, than in January, 1939, despite somewhat smaller exports, consumption in the United States having been 13 percent greater. The supply of those heavy fuel oils, used principally as fuel for industry, was 6 percent smaller at the middle of March, 1940, than a year previously.

Lubricants and Wax

Lubricants, wax, coke, and asphalt have shown increases in export as well as domestic demand. Total demand for lubricants was 27 percent larger in January, 1940, than in the first month of 1939. Domestic requirements were up 28 percent and exports 25 percent. Stocks of lubricants are about 6 percent smaller than a year ago.

Tables published herewith show details for January on domestic and export demand and inventories of wax, coke, asphalt, road oil, and miscellaneous products.

Changes from Year Ago in Stocks of Crude and Refined Oils in the United States

(Barrels of 42 U. S. Gallons)

LATEST WEEKLY DATA

(Sources: Crude stocks, Bureau of Mines; all other figures American Petroleum Institute.)

STOCKS OF:	Mar. 18, 1939	Mar. 16, 1940	Percent Change
Gasoline	86,332,000	100,616,000	+19.9
[1]Gas Oil & Distillate Fuels	27,268,000	24,075,000	—11.9
[1]Residual Fuel Oil	110,716,000	103,588,000	— 6.4
Crude Oil	[2]272,852,000	[3]245,762,000	— 9.9

LATEST MONTHLY DATA

ITEM	Stocks at End of January		
	1939	1940	Percent Change
SUMMARY—			
Crude Petroleum:			
Refinable in U.S.	272,346,000	239,794,000	—11.9
Heavy in Calif.	16,356,000	13,356,000	—18.3
Natural Gasoline	4,647,000	4,476,000	— 3.7
Refined Products	272,707,000	262,791,000	— 3.6
Total, all oils	566,056,000	520,446,000	— 8.1
Days' supply:			
January basis	157	127	—19.1
PRODUCTS—			
Gasoline:			
Finished	73,847,000	84,863,000	+14.9
Unfinished	5,619,000	6,112,000	+ 8.8
Total	79,466,000	90,975,000	+14.5
Kerosene	6,711,000	4,918,000	—26.7
[4]Gas Oil & Distillate Fuels	24,650,000	21,057,000	—14.6
[4]Residual Fuel Oils	95,548,000	84,759,000	—11.3
Lubricants	7,762,000	7,328,000	— 5.6
Wax (thousands of pounds)	128,627,000	74,575,000	—42.0
Coke (short tons)	717,000,000	628,000,000	—12.41
Asphalt (short tons)	532,000,000	593,000,000	+11.5
Road Oil	830,000	763,000	— 8.1
Miscellaneous	250,000	288,000	+15.2
Other Unfinished Oils	5,619,000	6,112,000	+ 8.8

[1] At refineries only, except in California.
[2] Stocks, March 11, 1939.
[3] Stocks, March 9, 1940.
[4] At refineries only.

Many Economies Developed In Pipe Reconditioning

CONDITIONS in the East Texas field have altered so radically from those envisaged in the early 'thirties that many gathering and field lines, originally laid with an estimated service life of perhaps 10 years, must now be reconditioned or replaced to provide possibly twice the life span initially built into them.

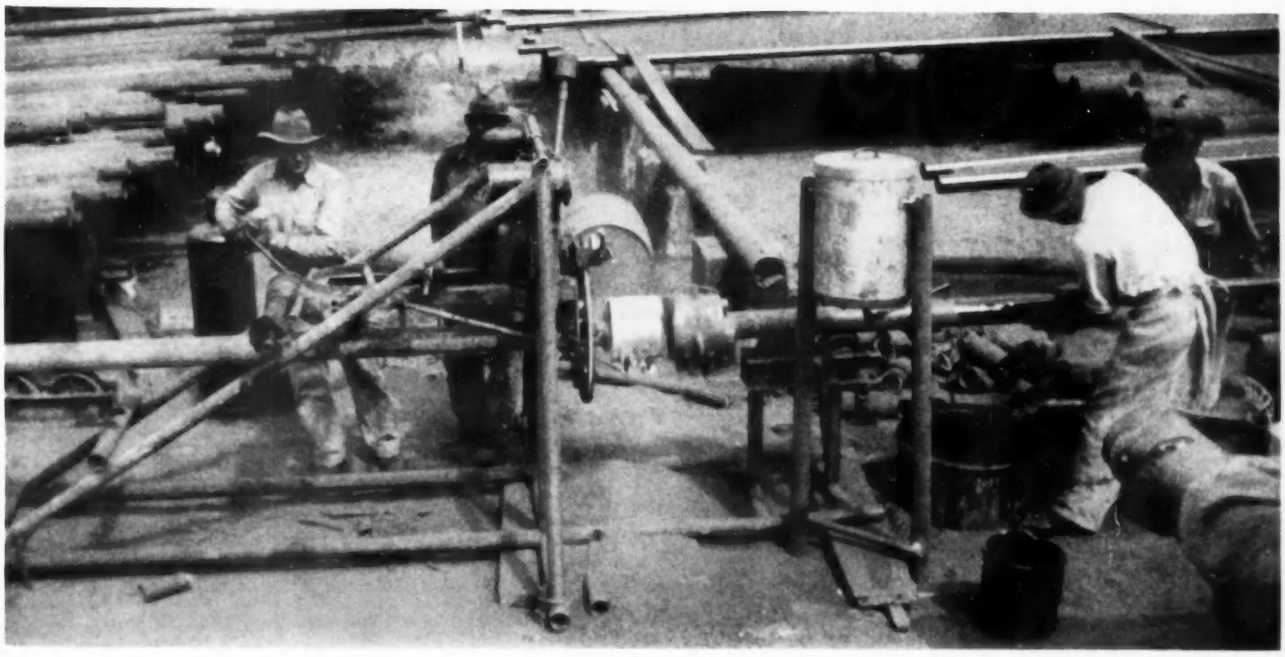
One of the larger companies operating in East Texas, with many miles of pipe ranging from 2 up to 4 inches in diameter, departed from the usual procedure of having this work performed by pipe line maintenance gangs. This company called in the services of an outside contractor in general pipe line and engineering work to clean, recondition and wrap several miles of 4-inch line which had been laid originally in ground of mild corrosive characteristics, with occasional "hot spots" and many pipe crossings to foster electrolytic action.

Each line, after being uncovered, was examined superficially, and hopeless sections discarded on the spot. The remainder was cut into standard lengths and trucked to the site chosen for the reconditioning work. Here the pipe was stacked on elevated racks from which each joint could be rolled, through the medium of extensions sliding within the pipe forming rack bases, directly to the roller-runway leading to the cleaning and treating machines.

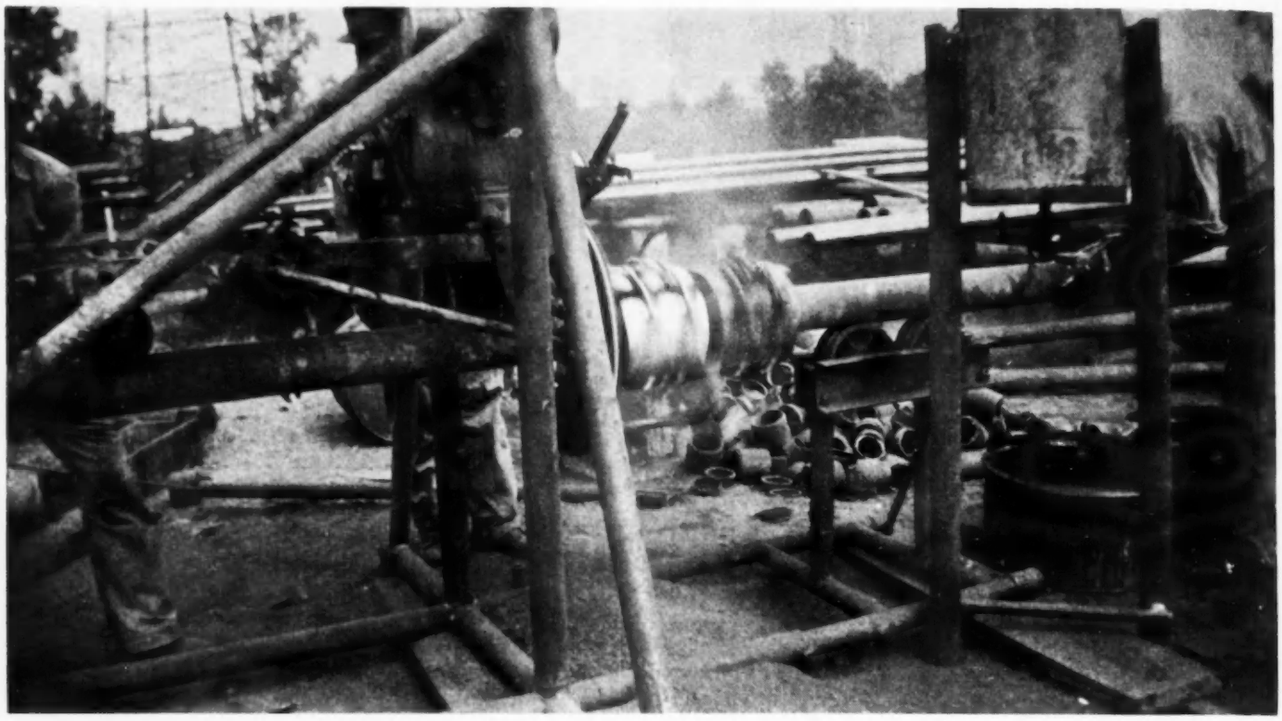
The runway to the machine was built up of parallel pipes, carrying between them short stubs on which larger pipe nipples were mounted, guiding but not restraining the pipe as it moved. Feed into the machine was assured by a light line, terminating in a hook, which was kept taut with a small hand winch adjacent to the machine. A second operator, with a small pipe wrench hooked into the same end of the pipe as the towline end, took the torque of the cleaning rotators and prevented rotation of the pipe.

The cleaning machine itself, of the usual field type, was suspended from the top crossbar of the frame so that it normally hung ¾-inch below pipe travel. This assured that the machine would ride its own rollers while actually cleaning the pipe, distributing the cleaning action uniformly around the entire circumference of the pipe and avoiding skips or slighted areas.

The flexible mounting of the cleaning machine permitted handling of slightly curved and offset joints without imposing undue



Cleaning pipe and applying hot "dope" in one handling of material, as one man feeds pipe through by means of small hand winch operating tail line.



Strongly braced frame reduces vibration and permits pipe cleaning machine to track on curved or distorted joints without losing effectiveness or requiring hand work.

strain on machine or stand. Continuous feed of pipe through the machine was provided by use of alignment nipples, consisting of short pieces of 3½-inch pipe, shimmed with longitudinal strips of tacked-on welding rod so as to make a snug fit within the 4 inches being worked. At the center of these nipples a circumferential strip of welding rod acted as stop to prevent the nipple being lost within either piece of pipe, while the projection was not high enough to interfere with knives or brushes on the cleaning machine.

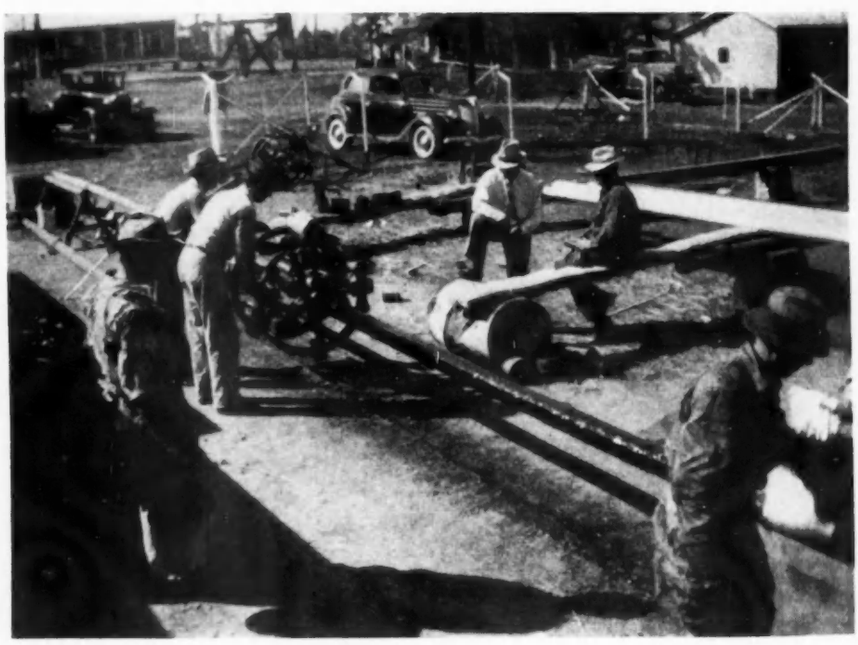
As the pipe emerged from the cleaning machine it was examined for excessive pits. If it required welding, it was laid aside to be built up as required. Joints passing inspection went directly under the drip of the hot dope pot. The coating was distributed by hand over the surface of the pipe after being flowed atop it by the pot nozzle. Feed through this operation was obtained by the same winching action that sent the pipe through the cleaner.

Reconditioning specifications called for five coatings to be applied to the cleaned pipe: a hot dope, then felt, covered by kraft paper, another coating of dope, and a final kraft wrapping over the entire lot.

By an ingenious combination of operations, this work was accomplished with less than the usual number of handlings. The initial wrapping machine, instead of applying only the felt, was equipped with a second stock head. Thus one running of the wrapper applied the felt directly over the hot dope and immediately followed it, a quarter of a turn later, with the first kraft wrapping. This double or dual wrapping produced an unusually smoothly covered pipe, and one on which the final coats could easily and expeditiously be applied.

The usual loss of time required for removing and readjusting the wrapping machines at joint ends and reinstallation on new work was circumvented by having a dummy joint supported on an ex-

[*Continued on Page 18*]



The wrapping line, with "granny rag" in foreground, machine making dual wrap at one pass in center, and roller-equipped supports in background.

Official A.A.P.G. Number

The Oil Weekly
April 8, 1940

THE MEETING of the American Association of Petroleum Geologists and affiliated organizations to be held in Chicago the week of April 8 marks the Twenty-fifth Anniversary of organized petroleum geology. It rounds out a quarter of a century of progress and achievement that is paralleled only by the advancement of the oil industry itself.

The history of the A.A.P.G. and petroleum geology is the rise of the oil industry, which, while nurturing the child, has blossomed the more fully because of its influence. Originating in the realm of science, petroleum geology has developed into a practical profession that today embraces most of the more important phases of oil-field technology.

The increasingly important role of modern petroleum geology makes it desirable at this time to trace the extent of its development and the scope of its influence in relation to oil field technique. With this in mind, THE OIL WEEKLY at the twenty-fourth annual meeting of the A.A.P.G. in Oklahoma City last March originally proposed a special editorial program on the subject to be published in connection with the twenty-fifth annual meeting at Chicago. The proposal later was officially approved by the executive committee of the A.A.P.G., whose assistance, naturally, would be required in the preparation of the rather monumental program.

Subsequently, committees were named by the executive committee to cooperate with THE OIL WEEKLY in developing the necessary data, and prominent geologists were selected to write or review the finished articles.

At first thought, it appeared that the history of the A.A.P.G. might be written by any of a number of geologists from their personal observations but reviewing the matter it was felt that such a history would not adequately do justice to the subject. Therefore, it was decided to supplement available reminiscences by a laborious check of the records. A careful study of the proceedings of all past meetings of the association, as represented by the more than 27,000 pages published in the A.A.P.G. Bulletin, has given an accurate background of the progress in petroleum geology against which can be projected its relationship to the growth of the oil industry.

THE OIL WEEKLY is gratified over the vast amount of highly interesting material that has been assembled, and is proud to provide a means for giving proper recognition to the 25-year record of accomplishment in petroleum geology.

Accompanying is a partial list of the articles, approved by the executive committee of the A.A.P.G., to be published in the April 8 issue of THE OIL WEEKLY.

These, and other features, should make the Official A.A.P.G. Number an outstanding contribution to the literature of petroleum technology. It will be an issue of interest to everyone engaged in the operating branch of the oil-producing industry.

Partial Editorial Program

The A. A. P. G.—An Introduction
By Henry A. Ley, President American Association of Petroleum Geologists.

Origin and History of the Association
(Including a pictorial preface to petroleum geology, pertinent statistics and interesting highlights in the progress of petroleum geology.)

Geology's Contribution to the Petroleum Industry
A review and forecast of geology's influence on oil field methods by a prominent geologist and major oil company executive.

Pictures and Biographical Sketches of past presidents.
A. A. P. G. Presidents and Affiliated Organizations.

History of Society of Exploration Geophysicists
By Paul Weaver, Chief Geophysicist, Gulf Oil Corporation.

Development of Seismic Prospecting
By B. B. Weatherby, President, Geophysical Research Corporation.

History of Gravimetric Prospecting
By E. A. Eckhardt, President of the Society of Exploration Geophysicists.

History of Society of Economic Paleontologists and Mineralogists
By Marcus Hanna, Past President of the Society.

Wrapping machine, fitted with duplicate heads, to permit winding felt and kraft paper covers with one pass of machine over pipe.

tension of the wrapping runway so that at the end of a joint the wrapper was run over onto this dummy. While still in place on it, the wrapper was placed at the end of the next joint, where an alignment nipple made the starting of the new wrap as easy as continuing the process whenever exhaustion of wrapper stock required renewal in mid-joint.

Completed joints, leaving the final wrapping stage, were not lifted manually, but were run off onto specially-prepared runways until the coatings of dope had hardened satisfactorily and cemented the component coats into a resistant mass. The runways were padded with straw over the wide plank foundations, and then covered with long strips of stitched sacking, bound around the padding and presenting a smooth, yielding surface over which the completed work could be rolled pending loading on truck for transportation to the field for replacing.

Triple ramps, straw and sacking protected, prevent damage to finished wrapping as it comes from end of working line.

During cleaning of a joint, continuous inspection for welds, patches and other projections from normal surface was maintained. The raised section was run up to the knives, and then operations halted until the obstruction could be fed through and the knives cleared. Such rough spots were hand cleaned before passing the doping stands, or if of sufficient extent, were considered cause for removal to the repair stand just the same as was pipe found having excessive pitting or deep corrosion.

By means of special runways, connecting nipples, and careful application of the protective coatings, the continuous handling of pipe throughout a working day was estimated to cut the work-over time by 40 percent as compared with usual yard cleaning operations. The provision for rolling the pipe at each move reduced the number of men which would have been required with usual stacking and lifting operations to be manned.

Contractor on the job was Wood Engineering & Construction Company, Arp and Tyler, Texas.

Pumping Series Article No. 38

Taking the Pulse of the Pumping Well

By D. O. JOHNSON
The S. M. Jones Company, Tulsa

TAKING the pulse of the pumping well offers a procedure for materially reducing pumping costs on many operations. In planning such efforts, well studies should first be classified as to purpose, that is, as to whether the problem is to eliminate equipment failures, to improve efficiency, or to gather important data useful as a guide in the selection of new equipment. Consideration should then be given to the type of well to be dealt with so that limitation may be better defined. This means knowing whether the well is operating to the capacity of the equipment, or to the capacity of the well, or whether it is prorated. When interpreting the dynamometer card in such work it should be borne in mind that the load recorded is really the dead-weight load plus or minus the relative acceleration of the hanger and polished rod, and that acceleration forces can come from the stored energy in rod strings as well as from the hanger. This principle explains many peculiar cards and allows a further exploitation of the information dynamometer cards contain to affect improved pumping results. Mature experience in this type of work indicates there is a large field for its further expansion and that what we know today is only a forerunner of tomorrow's possibilities and that the original method of lifting oil, although it has undergone much improvement, can still further be improved to meet pumping conditions and the need for lower pumping costs.

This paper was presented at the Spring Meeting of the Mid-Continent District, American Petroleum Institute, Division of Production, Wichita, Kansas, March 14-15, 1940. The statements and opinions expressed herein are those of the author, and should not be considered as official action or opinion of the Institute, nor of this publication.

IN these days of high taxes and low profits, the pumping well offers one of the few outstanding opportunities for lowering operating costs. The rapidly growing importance of economic pumping operations becomes clearer when it is considered that some 15,000 new wells will probably be put on the pump for the first time during 1940, and this forms just one year's quota of the constantly increasing number of pumping wells in the industry.

Nearly everyone agrees that pumping oil wells costs money and in too many cases—too much money. Unfortunately some people feel that this cannot be helped, that it is just the "nature of the beast" and in a few cases pumping is considered an antiquated method which should be done away with —though there still does not seem to be any other generally proved better procedure to go to, in the majority of cases.

On the other hand, there are an increasing number of people who are doing something about pumping costs. The surprising thing concerning this effort is that the more one gets into it, the larger the field of opportunity becomes. Several production engineers who have been leading in this work, have recently remarked that as they have progressed in it, they realize more and more the many things that can be done to lower and improve pumping costs. In fact, it is the opinion of an increasing group that the opportunities in this field have hardly been scratched.

A number of years of study on a large and varied cross section of pumping wells in practically all fields has proved that most oil wells can be pumped economically and that a better understanding of pumping operation will pay for itself many times over. This is not only applied to the troublesome pumper that breaks equipment, or the sneak thief pumper which is superficially doing the best it can, but also to the new pumping well which calls for sound equipment selection.

The thing that fools a lot of us in this problem is that it is more a homely question of sound practices than a dramatic solution involving a new equation or startling discovery. The truth of the matter is that it is greatly a question of plain common sense and experience as helped out by a few technical instruments or yardsticks which are quite simple when considered in a plain manner.

The pumping system is after all composed of three main parts: (1) The motivating unit; (2) The pump, and (3) The connecting link, which is the sucker rod. The success of the system as a whole depends upon the proper functioning of each of its parts and as the most easily damaged two thirds of the system works where we cannot see nor easily inspect them, we need some method of gauging their general health in order to avoid trouble and to effect improvement.

The health of human beings is today judged in numerous manners, but there is one unfailing method of telling what is going on inside the system. Superficial surface evidence is not enough and the old medical practice of taking one's pulse is still relied upon to indicate hidden facts, and to tie together surface or known conditions.

Taking the pulse of a pumping well is vital in judging the health of its system. The throb and vibration of the sucker rod will tell many things to the experienced well operator and tie together what would otherwise be superficial information in a safe and constructive way which means saved dollars in operating costs.

The purpose of well studies which are based on taking the pulse of the pumping well is to determine the cause for equipment failures, to improve effi-

ciency of the system, and to have a guide in the selection of new equipment. Taking these up in their order we will first consider the problem of determining the cause for equipment failures so that these troubles may be corrected.

Failures due to Fatigue

Most generally, equipment fails due to fatigue of the metal and this fatigue is affected by the peak stress, the range of stress and the number of stress reversals to which the metal is subjected. The peak load on the polished rod, as measured by the polished rod dynamometer, the range of load and the speed of operation of the well, might be called the normal fatigue factors.

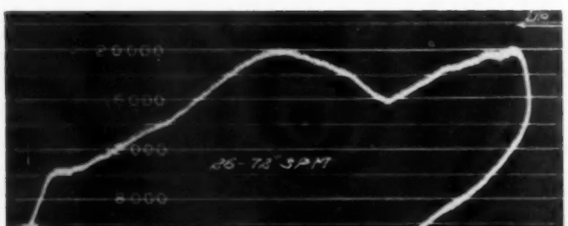


FIGURE 1

Then there are stress-raising factors such as vibration, fluid pound, erratic operation, corrosion pitting and embrittlement which might be called abnormal fatigue factors.

When equipment fails, all fatigue factors should be considered and adjustments made in operation and equipment in order to minimize their effect. Of course, their are equipment failures which result from defective material but these are usually pretty easily recognized and the problem then is simply to effect replacement.

The most common and practical method of roughly checking the efficiency of a pumping well, is to consider the ratio between the actual amount of fluid being produced and the volume of fluid theoretically displaced, assuming the pump plunger to be traveling the same distance as the polished rod. The efficiency thus obtained is termed the "apparent volumetric efficiency." Most operators will agree that when the "apparent volumetric efficiency" is 80 percent above, it may be considered good.

The first cause for inefficiency is that the pump barrel does not fill completely and this may be due to a pump-off or to gas getting into the pump. The second factor influencing efficiency is the effective travel of the plunger. If for some reason the pump plunger motion is restricted either because the plunger is too large or has too much friction in it, efficiency will be low.

Leakage of the pump valve, or leakage past the plunger or through a hole in the tubing naturally will also produce low efficiency. All of these above factors must be considered in a well study designed to improve the efficiency of the well.

Study of Load Characteristics

A study of the load characteristics of a well very often may be used to good advantage in the purchase of new equipment for the particular well in question or for other wells in the same producing area. A careful study of the loads encountered when tied in with the performance of the equipment already installed will serve to prevent over or under equipping new wells.

In the study of pumping wells there are three general classifications of wells which must be considered:

1. A well whose production is limited by the capacity of the pumping equipment.
2. A well whose production is limited by the well's ability to produce.
3. A well whose production is limited by proration.

Considering the first of these three classifications, more fluid could be lifted in such wells if equipment could be economically built to withstand the load, torque and horsepower necessary. Very often equipment is greatly overloaded in the production of such a well and numerous equipment failures result. The problem then is to balance the cost of these failures against the returns from the added production.

Practically all wells where water encroachment is a factor are in this classification sooner or later. Many wells in the Seminole, Oklahoma, field are now operating with 80 to 95 percent water cut and polished-rod loads run as high as 25,000 to 28,000 pounds with polished-rod horsepower as high as 60 to 70. A surface dynamometer card taken on such a well is illustrated in Figure 1.

Sometimes a well may change greatly in a comparatively short time. As an example a Kansas well was weighed when first put on the pump and again a year later. When the first study was made the peak load was 12,600 pounds with a polished-rod horsepower of only 2.4 and there was no water produced; when the second study was made it was producing 78 percent water and the load was 24,800 pounds and

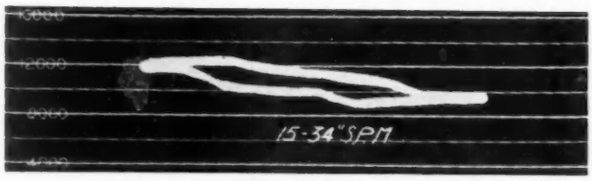


FIGURE 2-A

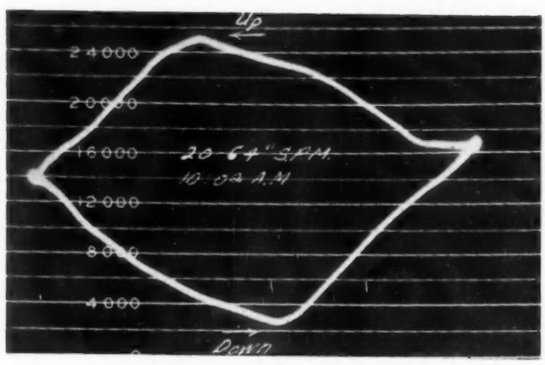
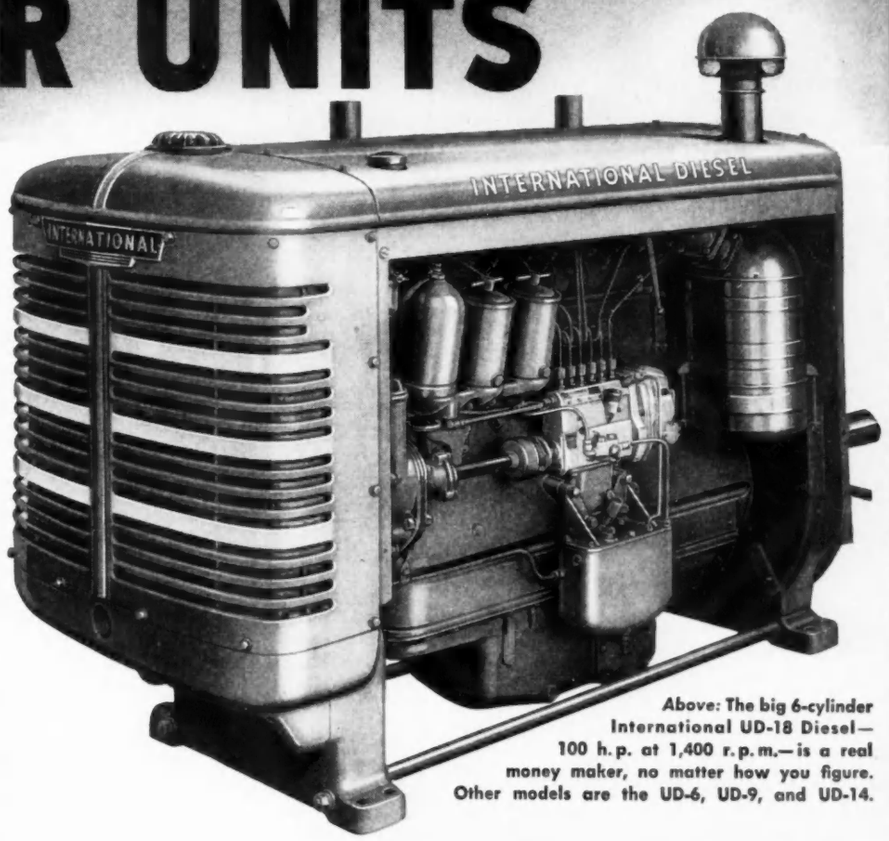


FIGURE 2-B

polished-rod horsepower 41.1. Figure 2 shows a comparison of the load characteristics taken just a year apart.

Numerous potentials have been taken in the past on Kansas wells where operating speeds were run above 40 strokes per minute. An example of the type of load characteristic under potential operation is

International Harvester's
FOUR NEW DIESEL POWER UNITS



Above: The big 6-cylinder International UD-18 Diesel—100 h.p. at 1,400 r.p.m.—is a real money maker, no matter how you figure. Other models are the UD-6, UD-9, and UD-14.

INTERNATIONAL HARVESTER scores another success in the Diesel field with FOUR NEW DIESEL POWER UNITS. Here is *smooth, economical* Diesel Power in *compact, convenient form—easily installed, simple to operate,* ready to solve your power problems and cut your power costs. These engines range in size up to the UD-18, rated 100 h.p. at 1,400 r.p.m.

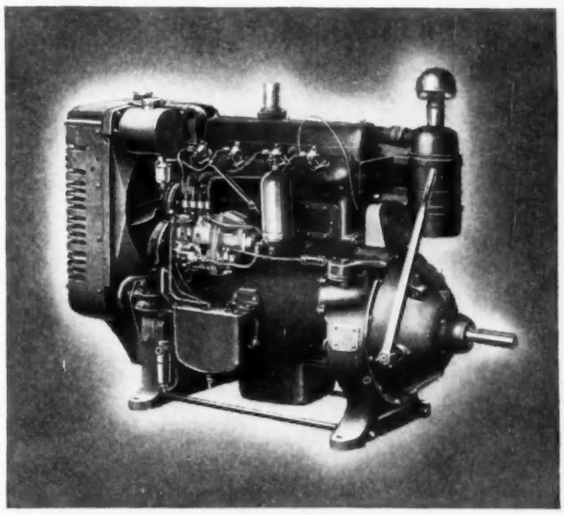
This good news for all users of power follows the introduction of International's FOUR Diesel Trac-TracTors for 1940. Now you can get International Diesel *design, quality, performance*—and International *full* DIESEL fuel economy—in *various sizes* of power units and crawler tractors.

International Diesels are engineered in every detail for *economy of operation, economy of maintenance,* and *long heavy-duty service.* See the nearby International industrial power dealer or Company branch for complete information. The International line also includes power units for gasoline, gas, and distillate operation.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
180 North Michigan Avenue Chicago, Illinois

FEATURE FACTS ABOUT INTERNATIONAL DIESELS

1. Full Diesel engine with full Diesel fuel economy.
2. Easy to install, simple to operate.
3. Basic parts can be attached or detached for a wide variety of equipment combinations.
4. Quick, easy starting.
5. Governor and extra-large flywheel maintain any engine speed desired, up to maximum governed r.p.m.
6. Long-lived, heat-treated alloy cylinders—replaceable.
7. Tocco-hardened crankshaft with precision-type, replaceable main and connecting-rod bearings.
8. Full-pressure lubrication thru drilled passages.
9. Completely sealed to keep oil in and dirt out.
10. Efficient cooling system with thermostatic by-pass control.



***Above:* Here is International Harvester's small Diesel, the UD-6 (shown equipped for indoor use). This 4-cylinder engine packs a lot of power and is built to stand up under severe operating conditions.**

INTERNATIONAL Industrial Power

given in Figure 3, and many operators agree that this operation is really a potential as to what the equipment will stand rather than a potential on the well.

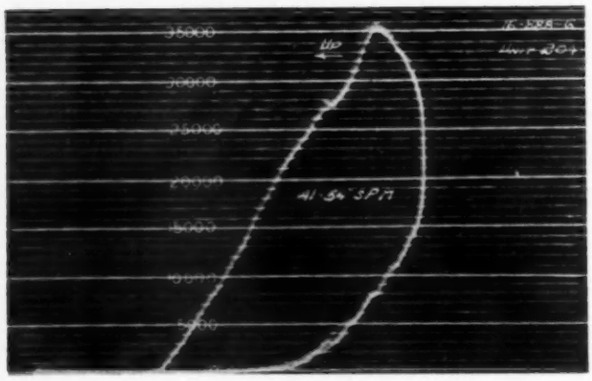


FIGURE 3

The second classification of pumping wells is the one where the well is producing all the fluid of which it is capable.

In a well of this type it is very easy for bad fluid-pound conditions to develop when the pump displacement is too great for the amount of fluid coming from the formation. In such a well it is important to keep the pump size to a minimum and to keep the speed of operation down to a point where the working barrel will fill as full as possible. Because of the low entrance pressure to the pump, large openings to the pump are often helpful in keeping gas from being pulled out of solution and partially gas-locking the pump. Such wells often can be operated effectively intermittently, particularly when the drive is an electric motor which can be started and stopped automatically.

Often operators will say that a well has to be pounded in order to get a bigger proportion of oil. While this may be true to some restricted extent, the pound should certainly be minimized as much as possible by keeping the well operating with a smaller pump displacement. Very often a severe pound can offset the advantage gained in production by effecting excessive equipment failures and downtime. A

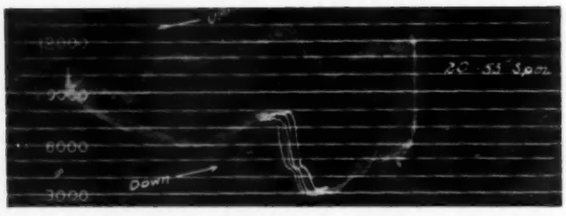


FIGURE 4-A

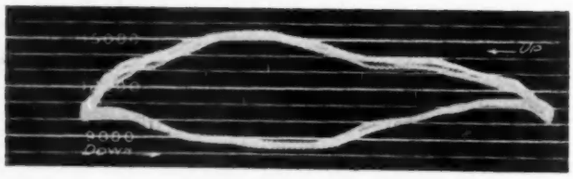


FIGURE 4-B

situation of this type is illustrated in Figure 4. Card A was taken at 20 strokes per minute and the card shows a bad pound. Sucker rod failures had amounted to 3 per month. After installing a smaller plunger the pound was eliminated, rod failures stopped and monthly production was maintained.

In these days of proration most wells will probably fall in the third category where production is limited by law. Efficiency in such a well is not too important as the well is often producing only a small part of its capacity. However, when water encroachment makes it necessary to operate full time to produce the allowable or when bottom-hole pressures drop to a point where pounds may develop, this type of well then falls into one of the first two classifications and may become very troublesome.

In newer fields where proration is put into effect early and formation pressures can be maintained for a longer period, the study of a few wells can form a basis of the selection of equipment with a consequent saving of investment.

Dynamometer

The most common instrument used in the study of pumping wells is the polished rod dynamometer. This type of instrument has been used for many years and much has been written on an interpretation of the load characteristics recorded. In order to understand just what the various types of dynamometer cards mean, it is well first to consider just what the dynamometer really measures. We might start by saying that it measures and records the instantaneous load or force acting on the polished rod at all points of the pumping stroke. The question then is, what causes the load or force to change the way it does and to produce all the different types of load characteristics.

Newton's second law of motion states that force is equal to mass times acceleration. Acceleration is defined as the rate of change in velocity or direction of a moving particle. The motion imparted to the polished rod in a pumping well is one where acceleration is brought about both by changing velocity and by change in direction.

The first thing to consider in interpreting a dynamometer card is that whenever there is an increasing load either the beam hanger is being accelerated upward faster than the polished rod or the polished rod is being accelerated downward faster than the beam hanger. Conversely a decreasing load means either that the motion of the polished rod hanger is being slowed down or some force is pushing up on the polished rod or accelerating it in an upward direction. In other words, the relative acceleration of the two members determines whether the load will rise or fall.

In order to crudely illustrate this, let us consider the beam hanger as being an automobile which is tied to a second automobile, the polished rod, with the dynamometer strain gauge between them. If the leading car is towing the second at a constant rate of speed there will be a certain load on the gauge. In order for this load to increase either the leading car must be accelerated or the car being towed might have the brakes applied. Conversely if the load were to decrease either the leading car would have the brakes applied or the trailing car would be accelerated. At the end of the stroke the cars would just be reversed and the leading car would be the one which was previously trailing.

The motive power of one of these cars comes from the prime mover of the pumping unit and the motive power on the other one comes from disturbances below the surface of the well. The motion imparted to

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the beam hanger is approximately simple harmonic and this motion is imposed on the polished rod. If instead of a sucker rod string and pump hung on the end of the polished rod, a weight equal to the dead weight of the rods was hung on and a dynamometer card taken, the card would be similar to Figure 5.

FIGURE 5

This card shows no area since no useful work is being done. If we could operate a well slow enough and without a pump on it we would expect to get a dynamometer card similar to this. Such a card was accidentally obtained on a Kansas well when the sucker rods unscrewed close to the pump. The well was operated at 12 strokes per minute and the load characteristic shown in Figure 6 was the result.

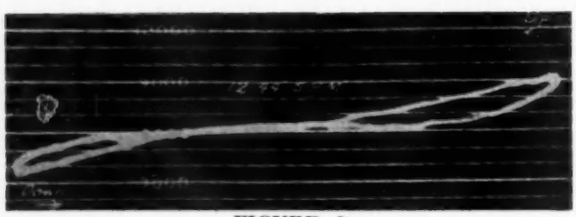


FIGURE 6

Although no useful work is being done the card shows some area which represents energy lost in friction. This card really crosses itself so as to produce a positive and negative area. The positive area would represent energy put into the rod string from the beam hanger and the negative area energy which is released from the spring action of the sucker rod string. The difference between these areas is the friction loss.

We may account for the difference between these two curves then by the fact that the rod string is not a rigid member but an elastic body like a spring in which energy may be stored and released.

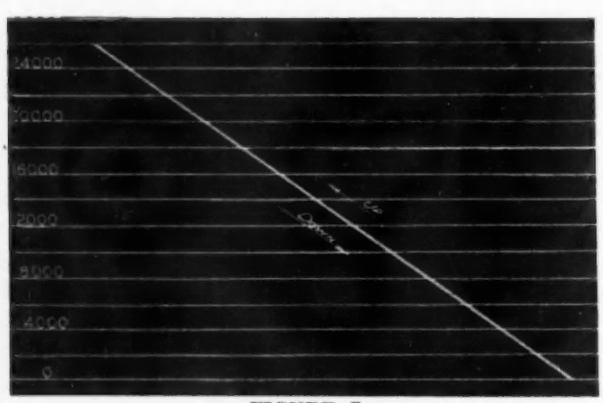


FIGURE 7

If instead of a weight hung on the polished rod we were to fasten a strong spring to the ground and the other end to the polished rod and then take a card, we would expect the load to continue to increase all the way on the upstroke since the force necessary to stretch the spring would be continually increasing. The theoretical card would be similar to Figure 7. A card was taken on an Oklahoma City well at the time that the pump was sanded up so that the plunger could not move and this is shown in Figure 8. Here again a positive and negative area

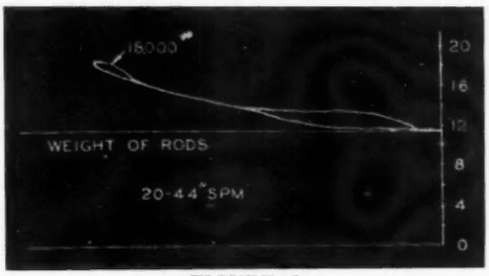


FIGURE 8

is recorded for energy given to and taken from the rod string.

Often dynamometer cards will show a loop at one or both ends as in Figure 9 and these may be explained as the result of having put excessive energy into the rod string during part of the stroke which is later released. The area inside the loop then represents energy returned from the rod string.

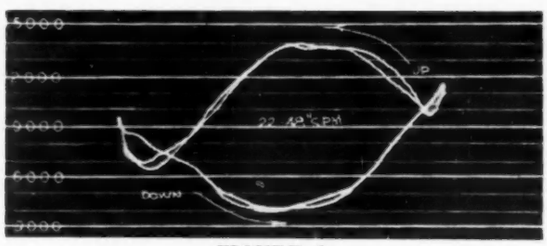


FIGURE 9

If instead of just a rigid weight at the polished rod we provide that a fluid load be picked up at the bottom of the stroke and dumped at the top of the stroke, the dynamometer card recorded would be similar to Figure 10. This particular card was calcu-

FIGURE 10

lated assuming a weight and fluid load equal to the rods and fluid in a well at Oklahoma City. The comparison of the calculated card and the actual card is given in Figure 11. The card shown is representative of a slow speed characteristic and shows the peak load occurring at the center of the stroke. Actually the peak acceleration is at the very beginning of the stroke and although the polished rod is accelerated immediately the entire rod string and fluid load is

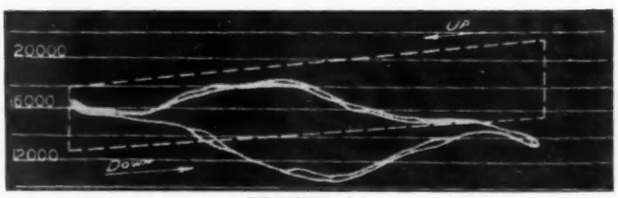
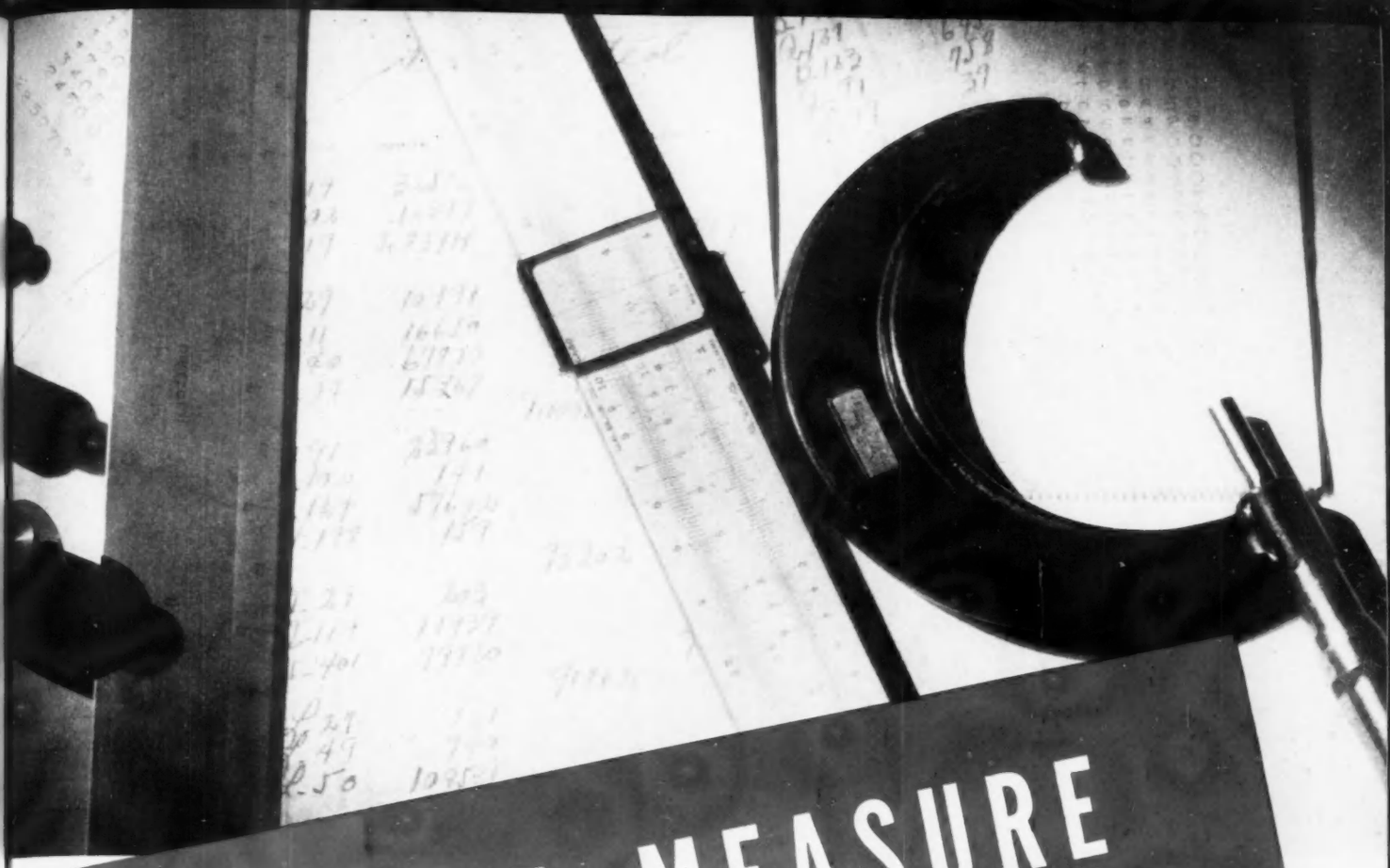


FIGURE 11



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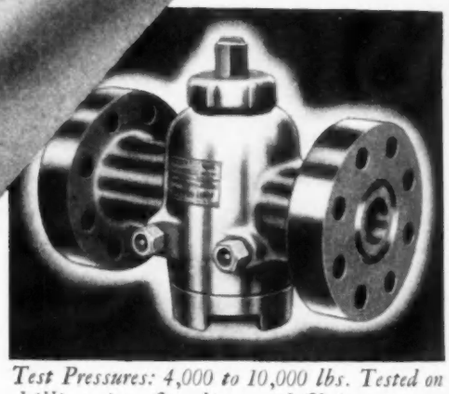

Test Pressures: 4,000 to 10,000 lbs. Tested on drilling rigs, flow lines and Christmas trees for 24 months without a failure.

because of automatic full-port lubrication, is always easy to operate, gives a perfect seal, and reduces friction, wear and maintenance costs

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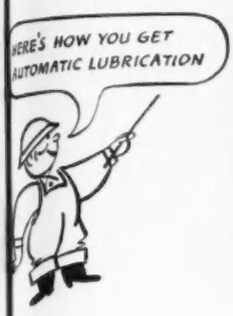

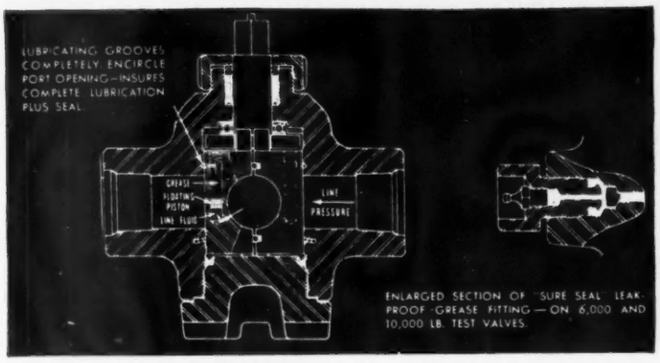
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GREASE
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LINE FLUID
LINE PRESSURE
ENLARGED SECTION OF "SURE SEAL" LEAK-PROOF GREASE FITTING — ON 6,000 AND 10,000 LB. TEST VALVES.

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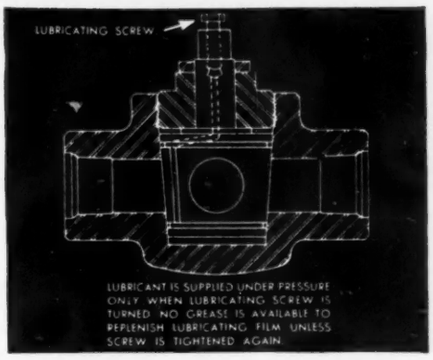
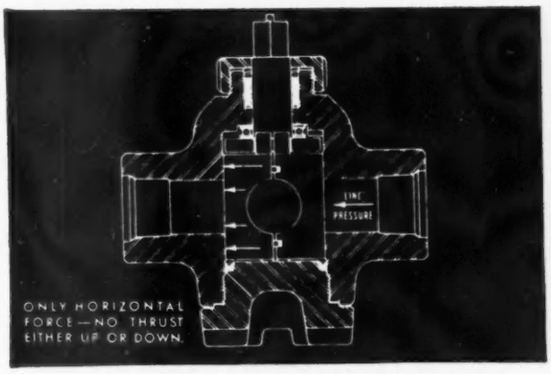
Line pressure against piston in lubricating storage reservoir automatically forces and holds sufficient lubricant in place in the grease grooves to both lubricate and form a perfect seal at all times regardless of pressure.


LUBRICATING SCREW
LUBRICANT IS SUPPLIED UNDER PRESSURE ONLY WHEN LUBRICATING SCREW IS TURNED. NO GREASE IS AVAILABLE TO REPLENISH LUBRICATING FILM UNLESS SCREW IS TIGHTENED AGAIN.

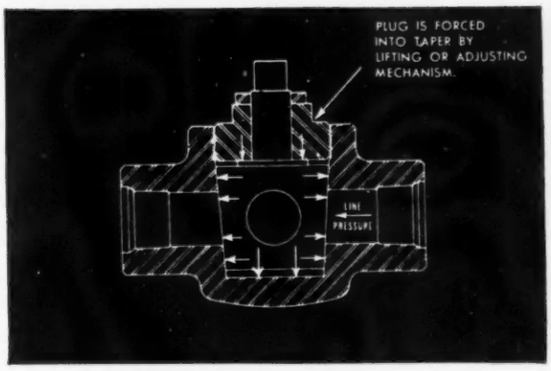
CONVENTIONAL LUBRICATION

Lack of constant pressure to replenish the lubricating film as rapidly as necessary can quickly cause serious damage and leakage.



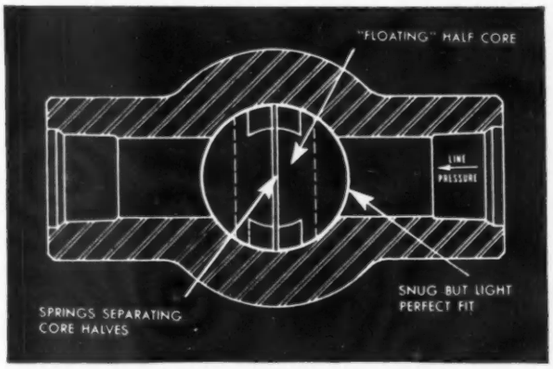
MISSION STRAIGHT CORE

A cylindrical plug seats perfectly and permits minimum side wall clearance. Constant lubricating seal is easily maintained. This increases valve life — assures easy operation.



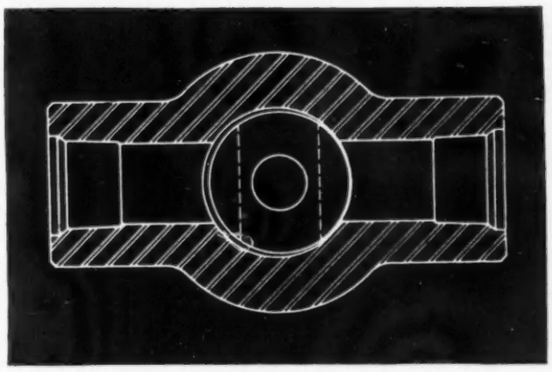
CONVENTIONAL TAPERED PLUG

A tapered plug also has vertical motion. It can seat perfectly only when wedged. Greater side wall clearance in operation makes a perfect seal difficult and allows opportunity for sand to accumulate under the seat. This increases friction and wear.



MISSION SPLIT CORE

Perfect contact with body allows instant seal under pressure. This protects surfaces from sand and grit, reduces cutting and wear, and reduces maintenance costs.



CONVENTIONAL SOLID PLUG

Unless wedged, a solid plug cannot fit its seat perfectly. As the plug wears, it cannot fit. This permits accumulation of sand and grit, accelerating wear, and greatly increases difficulty of operation.

Mission Plug Valves are made with the same careful standards of metallurgical research, manufacturing precision and inspection that have made each Mission product a leader in its field. This valve again emphasizes our long-established policy, "If a product designed by Mission is not proven superior, Mission will not produce it."

Mission Plug Valves are manufactured in 2″, 3″ and 4″ sizes and in three grades—4,000, 6,000 and 10,000 lb. test pressures—and are available or can be ordered from leading oil well supply warehouses. Prices of each style and size compare favorably with those of the best plug valves formerly available. Full details are available on pages 1716 to 1724 of The Oil Weekly Composite Catalog of 1940.

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not accelerated until the force is successively transmitted from top to bottom of the string. Hence the peak load does not occur until sometime later.

Let us consider a few abnormal types of dynamometer cards which will illustrate the various factors influencing the build up of a high load on the polished rod. The first of these is the so-called under-

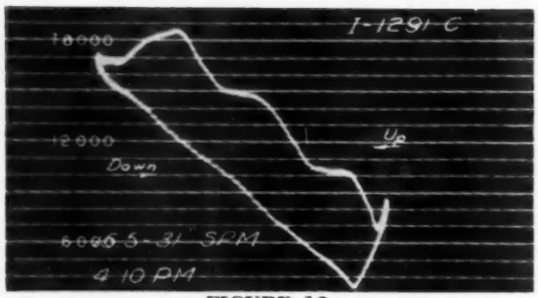

FIGURE 12

travel card (Figure 12) where the reason for the high load is a restriction in the movement of the plunger. The load continues to increase for practically the whole duration of the upstroke instead of falling off as would be expected when the rods and fluid had attained their peak velocity and the hanger was slowing down. Such a characteristic might also be attained if the beam hanger continued to accelerate all the way on the upstroke.

Next let us consider the case of extreme overtravel of the plunger where the peak load is due to maximum stretch of the rods resulting from the dynamic condition existing. The plunger in this case (Figure 3) is traveling downward with a very high velocity and before it stops traveling downward the beam hanger is already being accelerated in an upward direction which means that the sucker rod string is subjected to severe stretch. Now instead of, as normally, the load increasing on the upstroke it falls off all the way during the upstroke due to the release of the spring energy which was stored in the sucker rod string.

A third case concerns a dynamometer card showing a remarkable change in load characteristic which was caused by a change in the velocity and acceleration characteristics of the beam hanger. This is a case where nothing was altered except the addition of counterbalance to the beam which had the effect of retarding the downstroke velocity and thus reducing the force necessary to stop the sucker rod string and reverse its direction. (Figure 13).

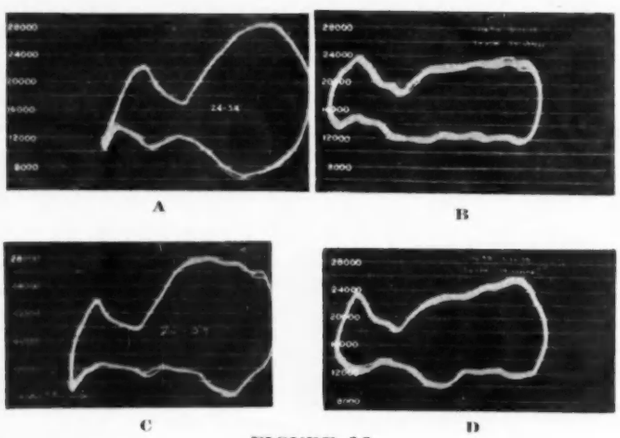

FIGURE 13

Spring Action in Sucker Rods

Because energy is stored in the sucker rod string due to its spring action, this energy may be released to accelerate the polished rod from below so as to produce great variations in the load on the dynamometer. By this method of reasoning an explanation can be given for an increase in load at the beginning of the downstroke of a dynamometer card. Such a

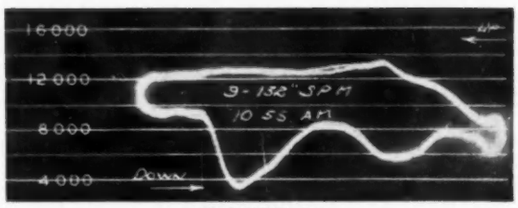

FIGURE 14

card is illustrated in Figure 14. As the polished rod hanger is going down at the time with increasing velocity, the load should naturally fall off but actually it increases. What really happens is that because of an extra pull on the polished rod due to a reflected stress wave, the polished rod is being actually accelerated in a downward direction at a greater rate of speed than the hanger, causing an increase in load.

To sum this up, any change in the polished rod load must be accompanied by an acceleration of the beam hanger or polished rod and the force really measured by the polished rod dynamometer is the deadweight load plus or minus that force resulting from the difference in acceleration of the beam hanger and polished rod. A consideration of these simple actions will allow a clearer understanding of some of their results.

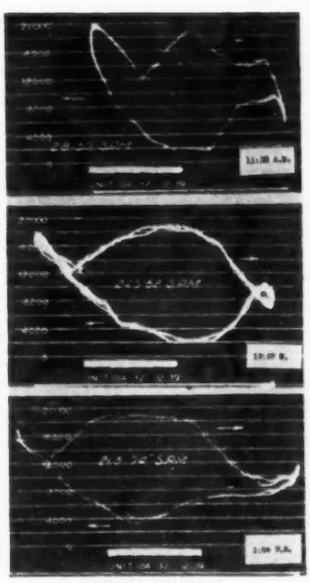

FIGURE 15

For any pumping well there may be determined the optimum pumping conditions for any given desired production and given surface equipment. By optimum pumping conditions is meant the best combination of speed, stroke and plunger size for best efficiency while at the same time keeping to a minimum, the load, range of load and number of reversals.

The most important type of well on which to determine optimum conditions is one where the well is being produced to capacity of equipment. Very often the speed and stroke combination may be changed to produce lower loads or lower ranges of loads or fewer reversals of stress while at the same time not sacrificing production.

Recently in a study at Seminole, a well of this type was run at 50-, 62- and 74-inch strokes at several speeds and careful production data taken simultaneously with load data. It was discovered that the well could be operated at 24 62-inch strokes per mnute with less peak load, less range of load and fewer reversals than at 28 50-inch strokes per minute

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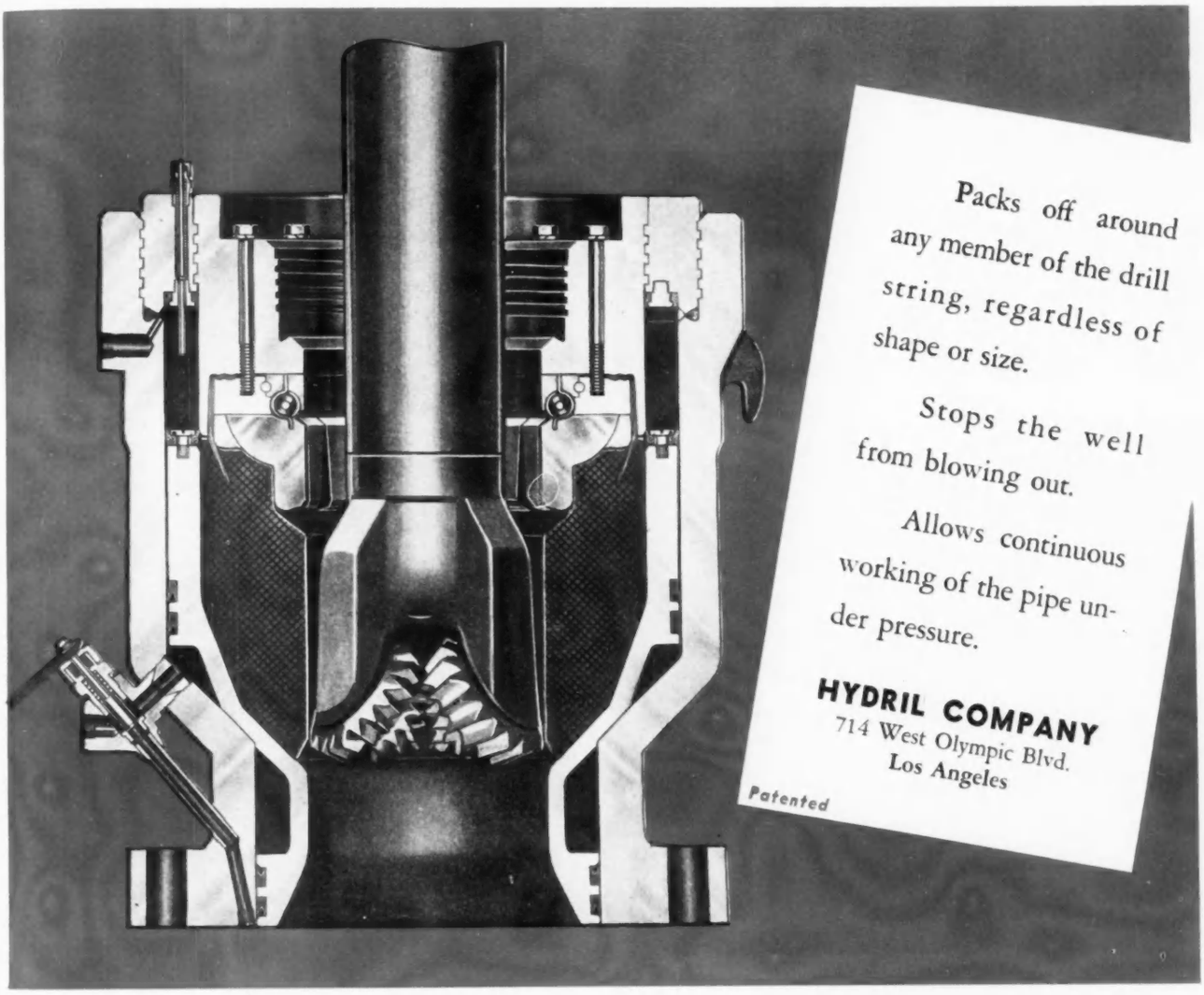

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Stops the well from blowing out.

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and at the same time get a little more production. When an attempt was made to carry this still further to the 74-inch hole, trouble was immediately experienced in that the belt loads became too high and the speed of the prime mover was reduced to a point where it was overloaded and gave bad speed regulation.

The comparative cards for the three lengths of stroke are given in Figure 15. These show that with the shortest stroke the high speed of operation necessary produces an unnecessarily high peak load at the beginning of the upstroke. A comparison of the loads and production are given in the following tabulation:

Speed	Inch Stroke	Max. Load	Range of Load	Pol. Rod H.P.	Production
28.2	50	23,000	21,000	34.4	694
24.5	62	18,800	16,550	32.6	775
21.5	74	19,000	15,300	29.8	745

We have already remarked that one of the important studies to be made on pumping wells concerned improving efficiency. The polished rod dynamometer can be very helpful in determining the causes for inefficiency. If the pump barrel is not filling properly, a pound of some magnitude will show up on the dynamometer card. If the well is pumping off then the position of the pound should progress when the well is speeded up and an example of this is shown in Figure 16.

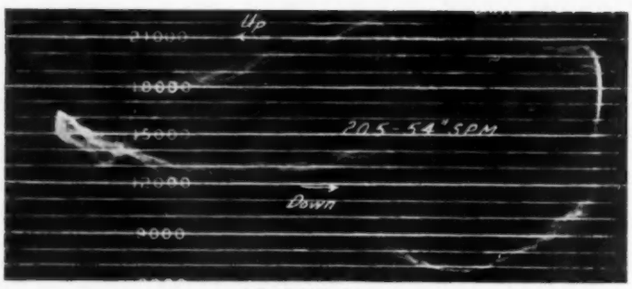

FIGURE 16-A

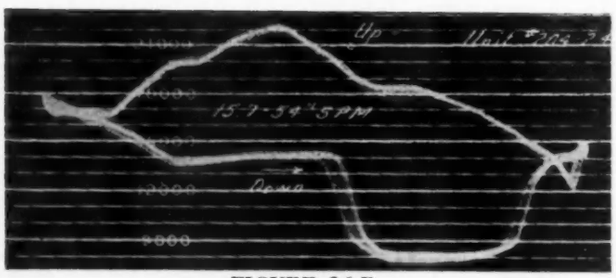

FIGURE 16-B

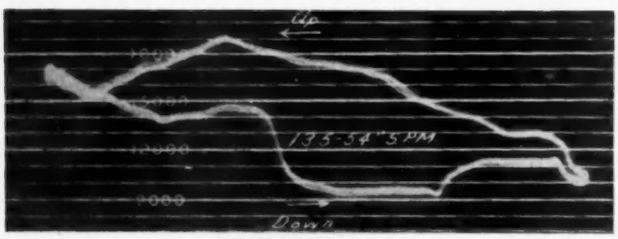

FIGURE 16-C

The consideration given in the previous part of this paper to the relative acceleration of beam hanger and polished rod helps to explain why some pounds are very difficult to denote in the dynamometer card. Acceleration forces released from the spring system of the sucker rod string may come at such a time as to just overcome the pound or make it appear worse. In studying a well at Seminole it was noted that the pound condition always lessened at a particular speed. It was always worse below and above this speed. Refer to Figure 17 as an illustration of this.

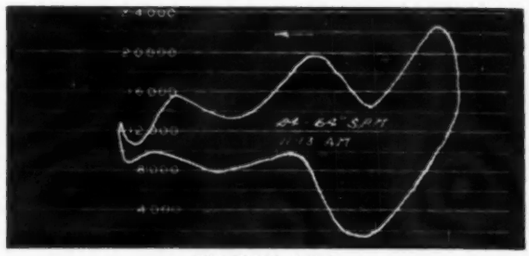

FIGURE 17-A

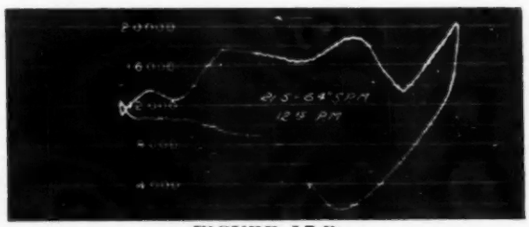

FIGURE 17-B

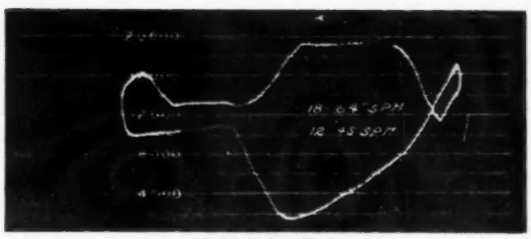

FIGURE 17-C

In all probability the pound in the case of the center card is just as bad as for the other two as far as its occurrence at the pump is concerned. But due to the relative acceleration of beam hanger and the

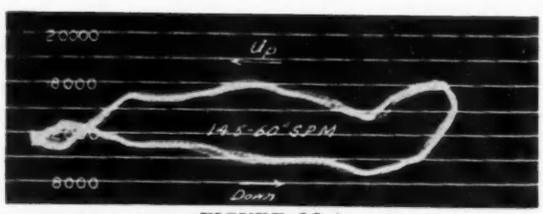

FIGURE 18-A

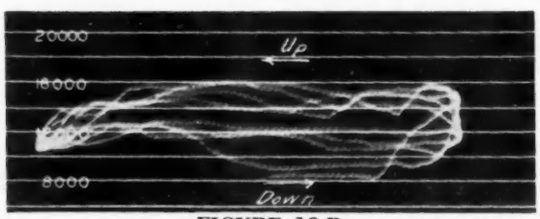

FIGURE 18-B

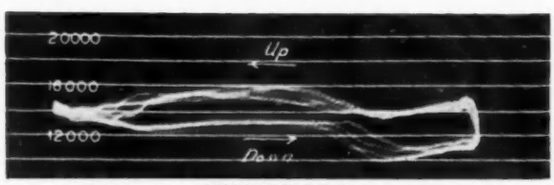

FIGURE 18-C

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Many times out in the field questions arise regarding applications of certain equipment—the quickest and surest way to solve such questions is to consult a copy of The Composite Catalog. Its more than 2200 pages of actual catalog material constitute a "veritable library of information."

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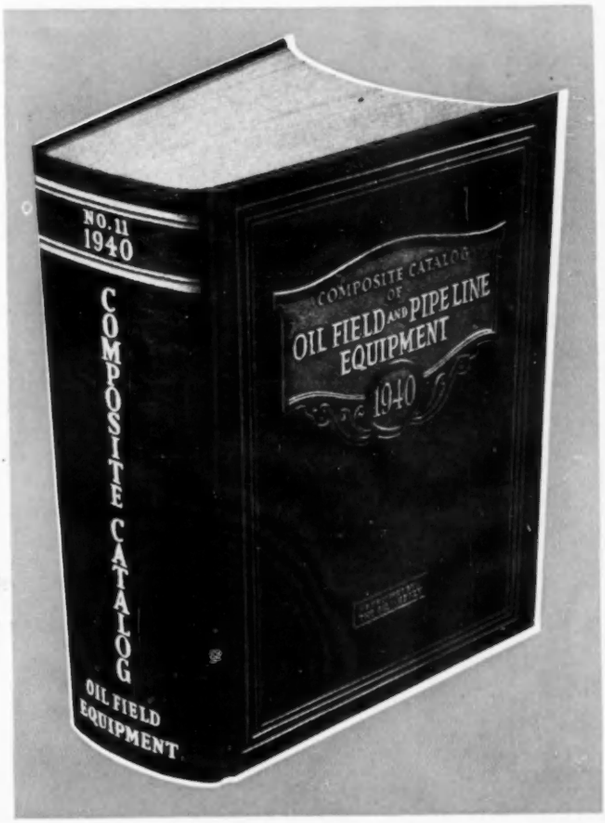

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ANY drilling contractor of wide experience knows that about the worst place in the world to have trouble is down in the hole. And to avoid unfortunate consequences, he knows that it pays to use nothing down there but the very finest, most trustworthy equipment.

That's why NATIONAL Seamless Casing has won such universal favor. For in this product there is no weld, no long line of potential weakness; each length is a perfectly formed cylinder, pierced from a solid billet of highest quality steel. Its walls have uniform strength and are thoroughly dependable throughout.

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In today's deep wells where uncertainty prevails, why experiment? Wouldn't it be better to standardize on proved products—NATIONAL Seamless Casing, Drill Pipe, and Tubing? Write today for complete data.

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- Seamless with Electro-Galvanized Threads and Couplings
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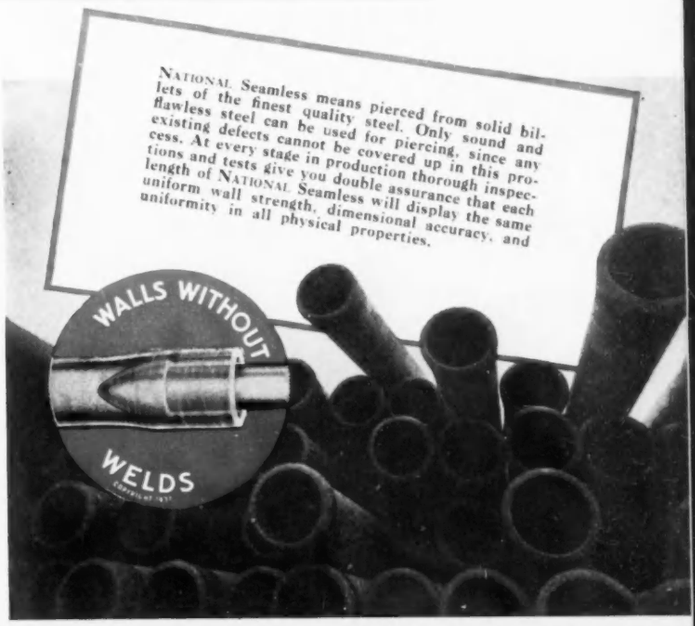
- Seamless Cement Lined Casing and Tubing

To be sure of getting the newest, most up-to-date improvements in Drill Pipe, Casing, and Tubing, always specify NATIONAL Seamless. National's policy is to bring you finer, stronger tubular goods, and bring them to you First!

*NATIONAL Seamless Casing is available in sizes up to 24⅜" O.D., the only *seamless* casing larger than 16" O.D.


NATIONAL Seamless means pierced from solid billets of the finest quality steel. Only sound and flawless steel can be used for piercing, since any existing defects cannot be covered up in this process. At every stage in production thorough inspections and tests give you double assurance that each length of NATIONAL Seamless will display the same uniform wall strength, dimensional accuracy, and uniformity in all physical properties.
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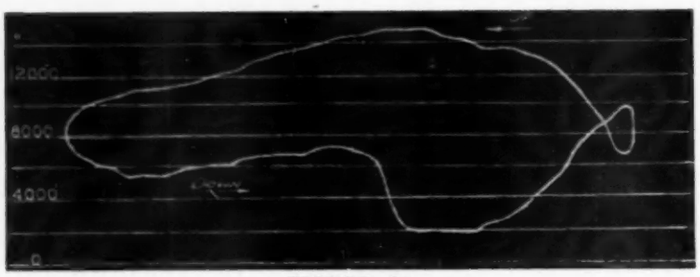

FIGURE 19

polished rod at the time this stress wave hits the surface it does not show up as bad as at other speeds and it has probably been dampened out.

Gassy Conditions

The hardest type of pound to distinguish is one where gas is causing the pump not to fill sufficiently. Ordinarily such a dynamometer card will show quite an erratic operation because of the instability of the pump's filling and the fact that no two successive strokes affect similar conditions. The characteristics shown in Figure 18 are definitely known to be the result of a gassy condition.

If the fluid level characteristic of the well is known for static and pumping conditions, then the operator can be sure when a gas pound is present because if there is sufficient fluid level for proper submergence and the pump is not filling properly then gas getting into the pump must be the reason. Getting rid of troublesome gas conditions is often difficult and entails experimenting with various gas anchors, pump settings and pump spacing.

Figure 19 illustrates the dynamometer card which might ordinarily be considered as a pump-off card and yet the bottom hole pressure taken simultaneously showed definitely that the barrel should have been filling completely. In this case gas obviously was the cause of the inefficiency.

A case of an undertravel card is pointed out in

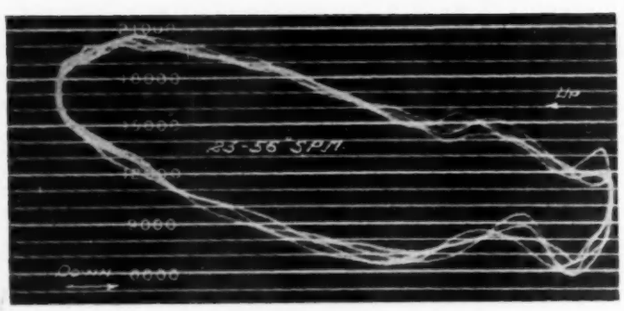

FIGURE 20-A

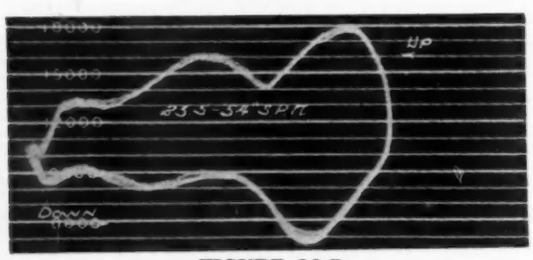

FIGURE 20-B

Figure 20 A, and this may be recognized from the general slope of the dynamometer card. Figure 20 B shows the load characteristics after a pump repair

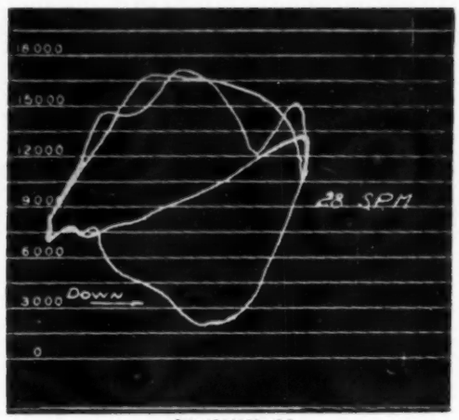

FIGURE 21

which consisted of the removal of a bad liner which restricted plunger travel.

Sometimes a dynamometer card may show faulty valve action but such a card is really a freak rather than a common occurrence. Figure 21 shows one where the standing valve failed to function on some strokes.

We have mentioned the prorated well and the advisability of making dynamometer studies so as to have a better knowledge of the load conditions which may be used as a guide in the selection of additional equipment.

The pumping wells in a new pool were recently studied so that the information gathered might be used as a guide in selecting equipment for additional wells which had to be put on the pump. The wells were found to be operating with comparatively high loads and low efficiency and the polished-rod horsepower was only about one tenth of the rating of the pumping unit. Therefore, in selecting equipment for the next well a smaller pump, smaller sucker rods, and a smaller pumping unit were chosen. The result was a lowering of load and an improvement in efficiency with the same amount of fluid produced and a cash saving in capital investment of approximately $1,000.00. The pertinent facts of this study are given in the following tabulation. Wells A and B were studied first and well C equipped on the basis of this data.

	WELL A Equipment Selection Based On Past General Experience	WELL B Equipment Selection Based On Past General Experience	WELL C Equipment Selection Based on Well Study Information
Rods-Feet & Size	4180'-¾"	4220'-¾"	1400'-⅞" & 2740'-⅝"
Plunger Diameter	1-25/32"	1⅝"	1¼"
Speed & Stroke	16-26"	18-26"	16-42"
API Horsepower Rating of Unit	28	..	11.1
Production:			
Oil (Barrels)	50	65	60
Water (Barrels)	3	1	6
Apparent Volumetric Efficiency	35%	53%	54%
Load			
Maximum	10,600 lb.	9,700 lb.	7,200 lb.
Range	3,400 lb.	2,800 lb.	4,000 lb.
Polished Rod Horsepower	2.2	1.9	3.3

Acknowledgment

Acknowledgment is gratefully made to the following for material used in the preparation of this paper: J. Hendrickson, I. T. I. O. Company; E. A. Jenkins, Skelly Oil Company, and Dr. E. M. Kemler, Gulf Oil Corporation.

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DRILLING CONTRACTORS' NOTEBOOK

Helpful Suggestions For Those Interested In Drilling Methods

Operating Ideas Maintenance Hints New Rig Hook-ups

Published as a regular feature of THE OIL WEEKLY

1. MUD CONTROL

Steel Dikes Slow Mud Flow and Settle Out Shale and Abrasives

These all-steel dikes for an Archer County, Texas, drilling operation slow down the rate-of-flow of mud and aid in settling out shale and abrasives.

R-G DRILLING COMPANY uses all-steel slush-pit dikes in slowing the flow of mud to accelerate settling of abrasives and heavier matter on operations in the Hull-Silk pool, Archer County, Texas.

The dikes are made of light sheet metal welded to 2-inch pipe frames that may be driven in the floor of the pit before filling with mud. They are made in two sections, connected together with hooks so the assembly points up-stream. Slots cut in the metal near the upper edge permits the conditioned mud to pass, but retards the lower part of the stream containing the heavy particles.

This rack is used to store odds and ends of pipe used in making surface connections prior to drilling. A vise is attached to one end of the rack to facilitate threading.

2. MOVING IN

Pipe Receptacle Speeds Work

WHEN moving in materials and making surface connections prior to drilling, Wilcox Oil & Gas Company finds considerable time can be saved by having odds and ends of pipe stacked together on pipe rack.

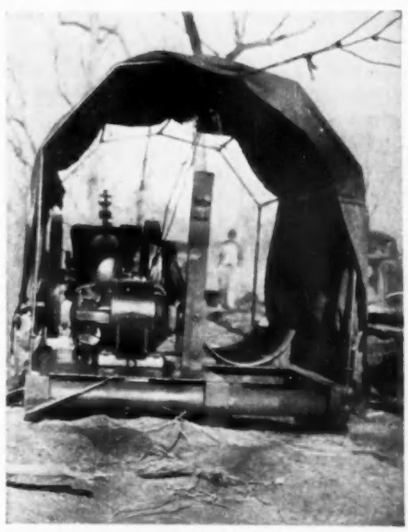
Fifteen-foot sections of 6-inch pipe running lengthwise and 6-foot sections of 2½-inch pipe running crosswise constitute the foundation. Cross-members are welded horizontally to the base and vertically for the support.

A vice has been attached at the end of the rack for threading pipe.

3. TRANSPORTATION

Canvas Cover Holds Down Weight

DURING extensive development in the Sac & Fox pool, Lincoln County, Oklahoma, Wilcox Oil & Gas Company reduced the overall weight of auxiliary equipment wherever possible to expedite movement from one location to another. A canvas top covering supplanted a metal housing on a generating unit, materially reducing the weight of that piece of equipment.



A canvas covering provides protection for this generating unit without adding excessive weight.

DRILLING CONTRACTORS' NOTEBOOK

4. DERRICK CARE

Hot, Warm or Cold Wash Water

AN INJECTOR tied into the derrick floor hose line just ahead of the quick-acting hose connection provides steam or hot, warm or cold water at a rig of Overton Refining Company without shifting or disconnecting the hose. Valves at the injector control the flow. When the water valve is closed, the line handles live steam only, and when the steam valve is closed and water valve opened, the line delivers cold water at main pressure. A mixture of steam and water in varying proportions provides water temperatures ranging from hot to slightly warm.

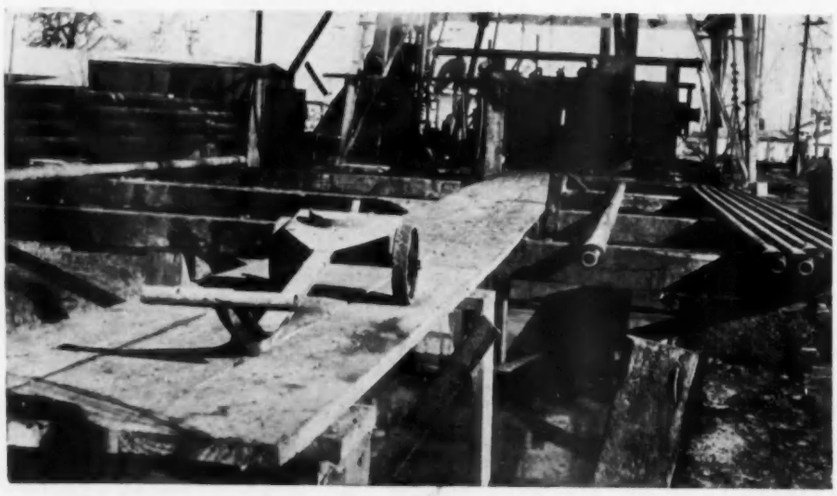
This injector on the floor hose line provides steam, hot or cold water for wash down by simple manipulation of valves.

5. RIGGING UP

Rack Construction Saves Space

CONSERVATION of space around a drilling rig in restricted locations is accomplished by one contractor by setting a series of 8 by 8-inch squares upright in the base of his slush pit and supporting the pipe rack and runway on them directly above the pit into which the mud supply is run.

The rack and runway, supported at floor level above the pit, do not interfere with inspection of the mud. The pipe and walk combine to safeguard the mud pit against accidental falls and hinders throwing or blowing of refuse into the pit—a cause of frequent suction clogging in townsite locations where much trash is blown about by the winds.



This pipe rack spanning the slush pit permits two units to occupy the space usually accorded one.

6. DERRICK LADDER

Platform Provides Safety Feature

RECOGNIZING the danger in the almost universal use of the first girt as walkway between the bottom section of the derrick ladder and the remainder thereof, one Rodessa producer equips his derricks with a sturdy crossover platform which hooks over the first girt and is suspended from the second by a pair of straps, making removal an easy matter when it is necessary to shift the platform.

Railed in and provided with heavy plank flooring, the platform completely removes a source of possible injury present when the second flight of the ladder terminates in the open air.

This platform, hooked over the first girt of the derrick and braced from the second, provides a safe contact between the first section and the balance of the derrick ladder.

The landing provides space for the first flight of the ladder where it is deemed advisable to store this in the derrick to prevent trespassing. It also affords room to take on a load to be carried up the derrick.

Sharp Rise in Tanker Rates Getting Government Attention

PROTESTS against sharply increased tanker rates have induced cognizance of the oil shipping situation in various congressional quarters, the latest important development having been a move toward a thorough government investigation. Meanwhile, several governmental agencies are studying the situation.

Charging that current high prices for bunker and fuel oils in the Atlantic consuming markets are due to exorbitant increases in water freight rates from the Gulf Coast to the East Coast, Representative Vincent F. Harrington, Democrat of Iowa, on March 21 introduced a resolution for a sweeping investigation by the House Merchant Marine and Fisheries Committee into the ownership, operation and practices of the oil tanker and barge transportation agencies.

Harrington asserted that since the outbreak of the European war the oil tanker rate from the Gulf to the East Coast has risen from less than 17 to more than 70 cents a barrel, resulting in an advance of 50 percent in the cost of Bunker fuel for merchant ships and more than a cent a gallon in fuel oils.

Further, he declared, the situation may be reflected in other fields and "gasoline consumers stand in a fair way to be penalized this summer if the rates remain as they are now, or go higher, as is rumored."

"A number of ships have been transferred to foreign registry by the major oil companies, giving them huge profits from the war and in turn creating a shortage of tankers for domestic use and increasing their profits on the American consumer," he said.

Among the matters which the resolution provides shall be studied by the committee are the relations between producers, refiners, and marketers of petroleum products and the operators of tankers and barges, and the effect of such relations on the independent non-integrated producer, refiner, or marketer, and on the consumer.

The resolution sets forth that "It has been alleged that the operation of oil tankers in coastal and international trade is carried on by various corporations in a manner detrimental to the best interests of the public, and inimical to the national defense and the development of an efficient American merchant marine."

It would give the commitee authority to make a sweeping investigation, including the subpoenaing of witnesses and records and the employment of experts, with particular refernce to the following points:

"Ownership, registry and operation of oil tankers owned by domestic corporations or their affiliates and engaged or used in international trade.

"Ownership, registry and operation of oil tankers and barges owned by domestic or foreign corporations or their affiliates and engaged in coastal, river, and harbor trade.

"Activities of persons, firms and corporations in transferring oil tankers from United States registry to foreign registry and the effect thereof on (a) the rates for transportation of oil by tankers; (b) the prices of domestic petroleum products; and (c) the prices charged merchant ships for bunker fuel.

"The chartering, leasing or other hiring of oil tankers by their owners and the extent of such activity as between supposed competitors."

"The relations—corporate, contractual and otherwise—between the producers, refiners, and marketers of petroleum products, on the one hand, and the operators of oil tankers and barges, on the other hand, and the effect of such relations on (a) the independent non-integrated producer, refiner, or marketer of petroleum products, and (b) the consumer of petroleum products."

Following completion of its investigation, the committee would inform the House as to any changes in existing laws or any new measures which may be necessary or desirable to cure any abuses which may be found to exist "in the organization, practices or operation of oil barge and oil tanker transportation agencies."

The tanker situation has been the subject of concern in Washington for a considerable period, and officials of the United States Maritime Commission have conferred with oil company officials and other owners of tanker tonnage as a result of protests it has received about the rate increases from members of Congress and the oil industry itself.

Following these conferences, Chairman E. S. Land reported that it was the opinion of the commission that the unusual increases in tanker rates and fuel oil prices were largely attributable to a shortage of tanker tonnage resulting from the European war.

However, he added, the commission is of the opinion that within a short time there will be available additional tanker tonnage and a more efficient convoy service for tankers in transoceanic trade which should result in most nearly normal rates without governmental intervention. The commission, he pointed out, has no jurisdiction over the rates, as the tankers are almost entirely owned or chartered by the respective oil companies.

The chairman of the Maritime Commission said that charter rates apparently were controlled by foreign owners in the Venezuelan trade and by independent tanker owners in the protected domestic trade, but that there was not any evidence that either foreign or independent American owners were withholding tankers from the market to force charter prices upward. The large oil companies, open market charterers of tanker tonnage, have disavowed any artificial boosting of the tanker rates, according to the commission chairman, and have asserted that the rise in rates has been simply the result of open market bidding for a scarce commodity.

Chairman Land explained further that the scarcity of tanker tonnage was attributed to war conditions. Foreign tonnage has been forced into war zone trade, and domestic tonnage has been diverted to compensate for the shortage that has arisen.

Moreover, according to the government official, the placing of tankers under convoy has radically decreased their efficiency.

Representatives of the Standard Oil Company of New Jersey, in conference with the Maritime Commission, estimated that currently two tankers were required to maintain a schedule to Europe that formerly could be maintained by one tanker.

Monopoly Committee Interested

The Temporary National Economic Committee ("Monopoly Committee") has become interested in the oil tanker situation and has considered making an investigation of the current rates, although it has not decided definitely to inject this matter into its other studies. Meanwhile, the committee has continued to watch prices of fuel oil and other petroleum products, in connection with its study of unwarranted price changes, requested by President Roosevelt shortly after the outbreak of the war.

The tanker rates also have been brought to the atention of the oil and gas subcommittee of the Interstate and Foreign Commerce Committee of the House of Representatives. Representative William P. Cole, Jr., Democrat of Maryland, chairman of that subcommittee, said that individual members had been interested in the situation, although the matter had not been considered by the group as a whole.

ICC Control Sought

Agitation has occurred, meanwhile, in favor of placing coastwise water freight rates under the regulation of the Interstate Commerce Commission. Rail and pipe line rates already are regulated by that body.

The Wheeler-Lea Omnibus transpor-

tation bill, which would put all types of transportation under control of the Interstate Commerce Commission, is in the final stages of settlement in a conference committee of House and Senate members. It is expected that final details of the measure may be worked out wtihin a few days, after which it will be turned over to the drafting clerks to be whipped into shape for final adoption, which probably will require several weeks.

A factor that is prominently mentioned in connection with the increased tanker rates is the trade agreement between the United States and Venezuela, under which about 50,000,000 barrels annually of crude and fuel oil imports will be allowed to come into this country for ¼ cent a gallon instead of the regular ½ cent import tax. The agreement became effective at the middle of the past December. It has been reported that after the tariff reduction, one company alone placed more than 30 tankers in the Venezuelan trade, although it is not clear how much of the diversion of tankers to Venezuela has resulted from the lowered import taxes and how much from the European war.

Particularly concerned are refiners and producers of the Southwest, who have had to absorb some of the added transportation costs to the East Coast. Usually there has been a sufficient differential between Gulf Coast and Atlantic Coast prices of oils to absorb the prevailing transportation costs. But now the differential will not cover the exceptionally high tanker charges, it is contended, and Gulf Coast shippers are at a disadvantage in selling in the East Coast market.

Investigation has disclosed that the average tanker rate from Gulf ports to points north of Cape Hatteras for the past five years was slightly less than 25 cents a barrel, and that the highest in recent years except 1939 was about 38 cents, the average for 1937, while the lowest was 14 cents, last August.

Tabulated herewith are figures on the rates from the Gulf Coast to North of Hatteras:

	Cents a Barrel
5-year average	24.43
10-year average	23.80
1931 average	17.70
1937 average	38.20
1939 August	14.00
1940 March	64.00

Expect Gas Association to Bring Large Gathering to Houston

THE joint convention of the Natural Gas Section and the Distribution Conference of the American Gas Association, to be held in Houston, May 6 to 10, is expected to draw a record crowd of natural gas men from all sections of the United States and Canada. The event will mark the first time the Natural Gas Section has met in Houston, and the first time the two American Gas Association groups have met jointly. It is the thirty-fifth annual meeting of the Natural Gas Section and the seventeenth annual Distribution Conference.

The convention program has been designed along practical lines and has been carefully planned to cover all phases of the natural gas industry so that every executive and employe may know what his industry has accomplished, and intends to accomplish in the future. Many of the papers are the result of years of research.

At the general session May 7, Herbert E. Graham, director of metallurgy and research for Jones & Laughlin Steel Corporation, Pittsburgh, will discuss "The Contribution to the Natural Gas Industry by Research in the Steel Industry." The department headed by Graham has within the past year attracted the attention of the entire steel industry with invention of the first scientific control ever applied to production of steel by the Bessemer process. A pilot plant research laboratory with miniature steel furnaces, rolling mills and other steel-making and finishing equipment, first and only pilot plant in the industry, has been erected to develop and prove formulas and controls before applying them commercially. The pilot plant successfully bridges the gap between research and production.

Research topics will be discussed by Frank C. Smith, president of Houston Natural Gas Company and chairman of the American Gas Association's Committee on Fundamental Research, and by Howell C. Cooper, of Hope Natural Gas Company, Pittsburgh, and chairman of the Natural Gas Section's Technical and Research Committee.

WALTER J. BECKJORD
President, American Gas Association

Production Conference

Two symposiums have been scheduled for the Production Conference. "Our Experiences with the Underground Storage of Gas" will be discussed by Carl U. Daniels, vice president of Oklahoma Natural Gas Company, Tulsa; Fenton Finn, geologist for Peoples Natural Gas Company, Pittsburgh; Porter D. Mellon, general superintendent and chief engineer for Canadian Western Natural Gas, Light, Heat & Power Company, Calgary, Alberta, Canada, and J. H. Newlon, geologist and production superintendent for Equitable Gas Company, Pittsburgh.

"Drilling Beyond the First Mile" will be discussed by C. E. Reistle, of Humble Oil & Refining Company, Houston; H. P. George of Southern California Gas Company, Los Angeles, and H. A. Wallace, Jr., of United Fuel Gas Company, Charleston, West Virginia.

The Production Conference will also hear a paper on "A Study of Mixtures of Separator Gas and Liquid from a Combination Well, Cayuga, Texas," by S. A. Chadwell, The Ohio Fuel Gas Company.

Transmission Conference

The Transmission Conference will feature a group of unusually up-to-the-minute papers on advanced phases of pipe line construction and operation. They include:

"Radio Communication for Dispatching and During Emergencies," by W. T. Bulla, superintendent of telephone and pressure, Natural Gas Pipe Line Company of America, Chicago.

"Use of the Go-Devil for Improving the Flow Efficiencies of Natural Gas Pipe Lines," by C. H. M. Burnham, chief engineer, Panhandle Eastern Pipe Line Company, Kansas City.

"Four Point Control in the Operation of the Four-Cycle Natural Gas Engine," by B. L. Rogers and O. H. Moore, Lone Star Gas Company, Dallas.

"Large Welded Pipe Lines," by H. J. Carson, vice president, Northern Natural Gas Company, Omaha.

These and other papers of a practical nature will bring the pipe line operator up-to-date on technological advances in operation and construction of pipe-line systems.

Many new uses have been found for natural gas in industrial plants during the past few years. H. O. Loebell, one of the outstanding engineers in the field, will present a paper on "Improvements in Industrial Processes Through Advancement in Heat Application."

Ask 20-acre spacing for Bonita, Montague County

Sinclair Prairie Oil Company has requested 20-acre spacing for the Bonita field, Montague County, with wells to be drilled 330 feet from lease lines and 660 feet apart

The company's Howard 1, discovery well, is ¾ mile west of the town of Bonita. Production is from a sandy conglomerate found at 5240 feet Nine feet of sand was taken in the discovery well.

The company asked an allowable of 250 barrels for the discovery well.

Thorough Oil Industry Census Is Well Under Way

WHAT are the facts and figures on the petroleum, natural gas and natural gasoline industry? What was the production in each section of the country? What was the cost of drilling? What proportion of the work was handled by contractors? How many workers were employed, whole-time and part-time? What were the man-hours?

These and many other questions of direct interest to those who follow the course of the oil industry will be answered soon in returns of the 1940 census, now well under way. Early in March the Census Bureau at Washington began mailing questionnaires to producers as well as contractors to collect the multitude of facts and figures which will tell the story of operations last year at the 340,000 or more oil wells and the 54,000 gas wells that dot the map of the United States.

Not only is this the first survey of the industry to be conducted by the Census Bureau in 20 years, but it is the most comprehensive ever undertaken since the first Census of Mines and Quarries was taken 100 years ago. It is being conducted in conjunction with the Sixteenth Decennial Census which includes, in addition to that of mines and quarries, and population, five other major compilations: The Censuses of Manufactures, Business, Agriculture, Drainage and Irrigation, and Housing which are being taken for the first time this year.

The Census of Manufactures will include, in its all-inclusive coverage, the nearly 400 petroleum refineries in the United States. Among the data it will record will be that on the consumption by manufacturers of fuel oil, gas and coal, as well as electricity, reflecting the growth in the utilization of petroleum products as compared with coal as an energy producer. The Census of Business will record all sales, including those of the 340,000 service stations, garages and other retail outlets for gasolines and lubricants. Thus, those engaged in every branch of the far-flung industry will be given an over-all, detailed picture of production and distribution from wells to sales to ultimate consumers.

To make the story of last year's progress of this continuously expanding industry complete, a special survey of contracting companies is being conducted to supplement that of producers of crude petroleum, natural gas and natural gasoline. Separate sets of questions have been sent to each in these three branches. These special questionnaires aim toward complete coverage of all essential facts and figures relating to each activity, but by listing only those questions which are strictly applicable, they simplify the work of those who supply the answers. Another schedule, relating only to personnel, has been submitted to central offices of each company so as to include those employees who cannot be conveniently reported on the other questionnaires.

As the cost of drilling operations throughout the entire industry has never before been completely covered, the data on this subject will be a welcome addition to this year's survey. Statistics are being compiled not only on the cost of these operations, but on the number and footage of all oil and gas wells drilled. This will include all wells completed during 1939 and all dry holes. Figures on the cost of equipment are also being collected. Under drilling cost is included that of labor, supplies, water, fuel and power used in erection and dismantling drilling rig and derrick, drilling hole, running and cementing casing, and hauling materials. Under cost of equipment is included that of casing, drilling derrick, equipment and supplies used for flowing, pumping and all other drilling operations.

In addition, there will be figures on total amounts paid to contractors who handle all or part of the drilling operations. This information will supplement that obtained from contractors, and will assure coverage of all drilling operations. The special question forms submitted to contractors, which are similar to those sent to producers, cover all essential information on the work they performed last year for each company.

Despite the advance of scientific technique employed in prospecting and production, the cost of drilling is still a severe burden to the industry. According to a survey of drilling operations in 1935, made by Dr. O. E. Kiessling, chief of the Division of Mines & Quarries of the Census Bureau, and N. Yaworski, assistant chief, average cost of drilling and equipping wells in 1935 amounted to $19,000. This survey also showed the average cost of drilling a dry hole was 50 percent greater than that of drilling a successful well, and that the cost of dry holes, that year, represented a net loss to the industry of not less than $84,000,000.

Although the number of dry holes and the annual financial loss have increased to some extent since 1935, the ratio in the cost of unproductive wells has greatly decreased. This trend is graphically set forth in a study published jointly in 1939 by the Works Progress Administration and the Bureau of Mines, in which Dr. Kiessling and Yaworski collaborated. Exact figures on the cost of drilling and equipping all productive and unproductive wells last year will be shown by census figures now being compiled. The inestimable value of this information to producers and contractors is self evident. To distributors, too, the cost figures will be of vital interest, not only because they point to the direction in which the industry is headed but because of their effect on prices.

Information relating to natural gasoline producers will include data on the amount of casinghead and dry gas treated in 1939, statistics on disposal of residue gas, in addition to production of gasoline and other products such as liquefied petroleum gas and motor fuel. The amount paid to contractors and the nature of the work they performed for producers of natural gasoline will also be recorded.

Information on employment, pay rolls and man hours in all branches of the industry will be the most comprehensive ever made available. Statistics are being collected on the number of workers employed each month, average weekly employment, both full-time and part-time, and the number of hours per week each was employed.Workers who operate and maintain wells will be tabulated separately from those who drill wells and build rigs. The number and pay of salaried employees—company officers, managers, superintendents, engineers, geologists and clerical staffs—will be listed separately from the statistics on manual workers.

The Bureau of Mines canvass of employes in the oil fields in 1937 shows there were 121,371 workers employed by the industry that year, 7 percent above the 1936 figure and 38 percent above the depression low. The total man-hours recorded for that year were 239,834,000—a gain of 10 percent since 1936. Production of oil, gas and gasolines has given jobs to more workers in recent years than in all branches of metal mining combined. In addition to those employed in the oil and gas fields in 1937, there were more than 83,000 engaged in petroleum refining and another 2000 or more employed in production of oils and greases not made in petroleum refineries.

In a real sense, the industry comprises not only the oil and gas wells, natural gasoline plants and refineries, but the thousands of wholesale and retail establishments, the 400 tank steamships, the 27,000 bulk plants, and the 194,000 miles of oil, gas and gasoline pipe lines extending across the country. Thus the industry provides, directly or indirectly, employment to hundreds of thousands of workers in a wide range of activities far removed

[*Continued on page 48*]

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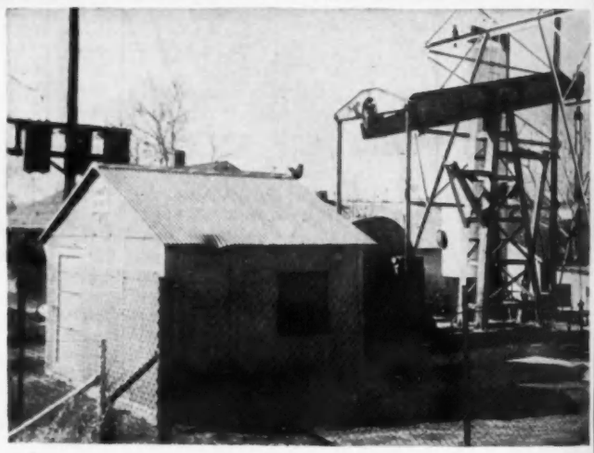

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PETROLEUM ELECTRIC POWER ASSOCIATION

HIGHLIGHTS IN THE WEEK'S NEWS

Tankers

Investigation of tanker rates sought in Congress

Increases in water freight rates from the Gulf Coast to the Atlantic Seaboard, described as "exorbitant," brought introduction of a resolution in Congress last week seeking a sweeping investigation of ownership, operation and practices of oil-tanker and barge transportation companies.

Rates have increased from less than 17 cents to more than 70 cents a barrel since the outbreak of the European war, according to the author of the resolution, bringing an advance of 50 percent in the cost of bunker fuel for merchant ships and of 1 cent a gallon in fuel oil on the East Coast.

The action also has bearing on previously-introduced legislation for placing coastwise water freight rates under regulation of the Interstate Commerce Commission, which group now regulates rail and pipe line rates. A full discussion appears on Page 37 of this issue.

Allowables

Bureau raises crude demand forecast 1 percent from March

Warning the industry that a high level of winter runs to stills, a record accumulation of gasoline stocks and a substantial reduction in exports reduce the usual sharp spring rise in demand, the United States Bureau of Mines March 20 forecast that demand for domestic crude in April would average 3,550,000 barrels a day.

April demand was set at 49,400 barrels, or 1 percent more than the estimated demand for March and 2 percent above the actual demand in April, 1939. The bureau pointed out that this is the first increase in demand forecast since last November.

The bureau found that daily average crude production during the four weeks February 10 to March 9 was 3,769,000 barrels and runs to stills 3,489,000 barrels, while during the period domestic crude stocks increased 6,489,000 barrels, giving an indicated daily average demand for domestic crude of 3,538,000 barrels, or about 15,000 barrels above the forecast.

"Increases in the amount of Illinois crude marketed, combined with weakness in the export market for crude petroleum and motor fuel, have curtailed the markets for crude from the Mid-Continent and Gulf states," the bureau commented in summarizing the general situation. "The April forecast of demand for Illinois crude is 215,000 barrels daily above the actual of a year ago, compared with a gain in the estimated demand for the United States as a whole of only about 64,000 barrels daily. The current rate of production in other states, if continued, will result in large additions to crude stocks or will stimulate refinery operations to a degree beyond the capacity of the market to absorb refined products.

"The trends in motor-fuel demand for the second quarter indicate a possible domestic demand of 6 percent above the corresponding period of last year, but smaller exports may reduce the gain in total demand to about 5 percent. By March 31, the increased motor-fuel demand for the first quarter will not only have been met, but finished and unfinished stocks will probably approximate 100,000,000 barrels, or 13,000,000 above the level of March 31, 1939. If this seasonal surplus is eliminated during the summer months it will provide two-thirds of the anticipated increase in total motor-fuel demand in the second and third quarters.

"The demand for distillate fuel oil, exaggerated by abnormally cold weather, reached record levels in the first quarter, but should drop to a more normal level in the second quarter," the bureau added. "In the areas east of California, fuel-oil demands in April must be met from current runs to stills because of depleted stocks. To attain a normal balance between supplies of motor fuel and other products, lower runs to stills than the current level with moderate gasoline yields and higher yields of other products seem to be essential.

"The high level of winter runs to stills, the record accumulation of gasoline stocks, and a substantial reduction in exports preclude the usual sharp rise in the demand for domestic crude in the second quarter. Unless conditions change materially, no substantial increases over the figures forecast for April, either in runs to stills or in the demand for domestic crude, seem probable for either May or June."

The bureau estimated domestic demand for motor fuel in April at 47,500,000 barrels, an increase of 8 percent over the abnormally low demand of 43,977,000 barrels in the same month last year. The estimate of exports, however, is but 2,800,000 barrels, or 863,000 barrels under the actual shipments a year ago.

Stocks of finished and unfinished gasoline on January 31 amounted to 90,975,000 barrels, and the American Petroleum Institute estimates indicate an increase of about 9,200,000 barrels in February, bringing them to more than 100,000,000 barrels at the end of that month. The bureau estimates a decrease of 1,700,000 barrels in finished stocks during April.

With benzol and direct sales of natural gasoline estimated at 900,000 barrels, the bureau finds refinery production will be 47,700,000 barrels during the coming month, which it distributed among the various districts as follows:

East Coast, 6,360,000 barrels; Appalachian, 1,990,000 barrels; Indiana-Illinois,

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Bureau estimate of daily average crude-oil demand for April (barrels)

(As no changes in crude-oil stocks are involved in these estimates, they represent demand rather than production)

State—	Forecast April, 1940
Texas	1,332,000
California	590,000
Oklahoma	413,000
Illinois	380,000
Louisiana	257,000
Kansas	151,000
New Mexico	100,000
Wyoming	66,000
Arkansas	64,500
Michigan	63,000
Pennsylvania	51,000
Montana	16,800
Kentucky	15,800
New York	14,900
West Virginia	11,000
Ohio	8,800
Indiana	7,800
Indiana	7,800
Mississippi	3,900
Colorado	3,500
Total	3,550,000

9,320,000 barrels; Oklahoma, 2,760,000 barrels; Kansas, 2,490,000 barrels; Inland Texas, 3,490,000 barrels; Texas Gulf Coast, 11,820,000 barrels; Louisiana Gulf Coast, 1,470,000 barrels; Inland Louisiana-Arkansas, 850,000 barrels; Rocky Mountain, 1,250,000 barrels, and California, 5,900,000 barrels.

Natural gasoline to be blended at the refineries is estimated at 5.9 percent of total production, or 2,810,000 barrels, while the yield of straight-run and cracked gasoline is estimated at 44.05 percent. Application of this yield to production of 44,890,000 barrels of gasoline gives crude runs of 101,900,000 barrels, or 3,396,700 barrels daily. Foreign crude runs are estimated at 2,600,000 barrels.

Crude oil exports are placed at 4,900,000 barrels, 1,322,000 barrels under actual exports in April, 1939, while crude oil to be used as fuel and losses are estimated at 2,300,000 barrels, giving a total demand for domestic crude in April of 106,500,000 barrels, or 3,550,000 barrels a day. The estimated demand for crude oil by states as shown in the accompanying table.

Believe high Texas allowable in March caused no harm

High allowables which have existed in Texas during the past few weeks have done no serious damage, in the opinion of operators and members of the Texas Railroad Commission, expressed at a hearing held last week. However, there seemed to be an equally general opinion that if production was continued at this rate indefinitely, a price break was certain. Consequently, it is anticipated that Texas may drop the policy of high allowables adopted for March.

The April proration order will probably be issued this week, Commissioner Jerry Sadler said.

The commission reported that the total allowable for the week ending March 16 was 1,556,589 barrels. The United States Bureau of Mines recommended that Texas produce 1,332,000 barrels during April, 224,000 barrels below present production.

Meanwhile, operators filed with the commission nominations to purchase 1,946,277 barrels a day, an increase of 211,562 barrels above March. With these nominations was a projection through the month of September which indicated that demand would increase to 1,968,000 barrels in August, and decline to 1,963,000 in September. Although nominations are usually in excess of production by 200,000 or 300,000 barrels, they have consistently indicated the trend.

Commissioner Sadler, in a prepared statement delivered as the hearing began, urged operators to be cautious in asking for increases. He deplored the high allowable, which he said threatened both conservation and price stability in the industry.

Gasoline Stocks

"The commission first considers conservation, and then it considers demand," he said. "Stocks in August, 1940, totalled 269,000,000 barrels, then declined to 229,000,000 barrels after the shutdown. All the economists I have heard agreed that 245,000,000 barrels of crude is about the right amount to have in storage. We have that amount now.

"Gasoline stocks, they contend, should be 82,000,000 barrels, but we have 100,000,000 barrels on hand now.

"I see no reason to ignore these figures and continue to allow high production. I have thought that the estimates of the Bureau of Mines are too low, and I recommended that the allowable for March be higher than that estimate. After the order was entered, some special grants were made to certain fields, then other fields were granted increases on the basis of equity. Now the allowable is too high. Nevertheless, there is still some discrimination between pools.

"I have kept quiet about East Texas because I came from there, but the present allowable for East Texas almost amounts to confiscation. This morning Commissioner Thompson and I agreed to give East Texas 475,000 barrels a day, if possible. The commission must disregard the wishes of independent operators to prevent a price cut. To do so, we may make someone mad."

Charles F. Roeser, Fort Worth, declared the policy the commission has pursued for the past few weeks is "industry-wrecking." He pointed out that Texas had 95,000,000 barrels of crude in storage, and lost nothing because 24,000,000 barrels of that was withdrawn instead of being produced currently.

"We now have 74,000,000 barrels of crude in storage in Texas and have added 4,000,000 barrels in the past few weeks. However, 10,000,000 barrels too much gasoline would represent 25,000,000 barrels too much crude," Roeser said.

Commissioner Thompson interjected figures to show that East Texas storage now totals 16,905,000 barrels, an increase of 189,000 barrels during the past week. West Texas crude in storage totals 16,007,000 barrels, an increase of 1,103,000 barrels during the past week. Gulf Coast crude storage totals 17,584,000 barrels, an increase of 242,000 barrels during the past week. Other oils in storage total 22,656,000 barrels, a decrease of 145,000 barrels during the week.

Roeser declared this indicated East Texas was producing 25,000 barrels a day more than it should; West Texas was too high by 160,000 barrels; and Southwest Texas was producing 35,000 barrels a day too much.

"The commission," Roeser said, "is doing the same thing that was done in 1937. The high allowables then resulted in a price break which cost producers $70,000,000 last year.

Quit Complaining About Illinois

"Quit complaining about Illinois," he added. "That oil is selling in the Chicago market 32 cents a barrel cheaper than Texas oil can be sold there. Texas will gain in the long run, because by ignoring conservation, Illinois will produce 150,000,000 barrels less oil in the next ten years. It will begin to decline in the next 60 days.

"We now have a surplus of 22,000,000 barrels of Texas crude. I urge the commission to adhere as closely as possible to the estimate of the Bureau of Mines. It is the only institution that can gather the information," Roeser said.

"We told the Cole committee how closely we were going to adhere to the Bureau of Mines estimate," Sadler remarked. "They believed it, Kansas and Oklahoma believed it, and we have got to keep our word. The Cole committee is still sitting; Congress is still in session; Secretary Ickes is coming to Texas and will report this deplorable situation.

"One Texas company made 150 new locations in Illinois. This is unfair. Several other companies are drilling up there, too, but we are forced to keep our word.

"If you want federal control, I'll go to washington, and I can give them some good reasons for it," Sadler said.

"The Independent Oil Producers' Equity Association," said Senator Clint Small, "is anxious for the state allowable to remain within the Bureau estimate." He urged the commission to do three things: first, fix allowables with-

Nominations for Texas Crude Oil for Six Months Period

DISTRICT	1940 April	1940 May	1940 June	1940 July	1940 August	1940 Sept.	Convert Into Products	To Sell As Crude Oil	To Use as Heating Oil	Increase April Over March	Decrease April Over March
1 Southwest Texas	29,348	29,320	29,320	29,320	29,320	29,320	13,223	16,125	.....	.....	644
2 Southwest Texas	119,997	121,103	122,103	123,103	124,103	124,103	41,368	77,136	1,493	11,629	....
3 Gulf Coast	318,183	319,564	320,945	321,826	322,407	322,988	158,661	157,522	2,000	5,400	....
4 Southwest Texas	245,399	246,429	247,009	248,239	248,819	249,049	104,003	130,446	10,950	615	....
5 East Central Texas	50,029	50,021	50,036	50,037	50,031	50,039	40,787	9,187	55	.....	478
6 East Texas Outside	69,152	69,152	69,152	69,152	69,152	69,152	23,415	45,737	.....	781	....
6 East Texas Field	455,892	456,892	456,892	456,892	456,892	456,892	245,603	209,789	500	31,309	....
7-B West Central Texas	37,639	37,664	37,714	37,714	37,764	37,764	25,634	11,313	692	10,627	....
7-C West Central Texas	24,313	21,313	21,338	21,363	21 363	21,363	10,125	14,138	50	.....	3,521
8 West Texas	370,775	375,918	376,019	379,070	381,065	376,109	272,459	95,536	2,780	118,810	....
9 North Texas	101,972	102,272	102,322	102,522	102,572	102,772	51,425	50,487	60	9,957	....
10 Panhandle	123,528	124,528	123,528	124,528	124,528	123,528	95,412	27,466	650	27,077	....
Total all Districts	1,946,277	1,954,176	1,956,378	1,963,766	1,968,016	1,963,079	1,082,115	844,882	19,230	216,205	4,643

Total Nominations April, 1940..... 1,946,227 Total Nominations March, 1940. 1,734,665 Increase..... 211,562

NAPHTHAS · FUEL OILS · DIESEL FUELS
GASOLINE · KEROSENE · NEUTRALS
BRIGHT STOCKS · AUTOMOBILE
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Modern refining methods, technical and scientific research, complete laboratory control of quality

in the bureau estimate; second, grant no special allowables without hearing; and, third, leave allowables unchanged that are fixed by one statewide order until a new order is issued for the following month.

By a show of hands, operators indicated their approval of this program. Many, however, refused to vote on the question.

Roeser agreed with Commissioner Thompson that the 75,000,000 barrels in storage now was not too much. He urged that the commission consider two factors, the Bureau of Mines estimate and the storage figure, and that adjustment be made on this basis. If the Bureau of Mines estimate was believed to be too low, raise the allowable; if storage increases as a result, reduce the allowable until storage declines again.

Independent refiners asked whether the oils in storage which appeared to be in excess of needs would be available to them.

In answer to a request from Commissioner Thompson, Hines Baker, attorney for Humble Oil & Refining Company, said his company was long on West Texas crude and could deliver some of that if certain arrangements were made.

Baker said that low stocks used last year damaged refineries and that his company needed about 13,000,000 barrels in storage. Now, it has a demand from its own plants of 3000 barrels daily of low cold-test crude similar to that produced in a few Gulf Coast fields in Texas, and in Louisiana and Venezuela. In addition to this, it has a customer who wants 12,000 barrels of this oil that the company has been unable to supply. The company is also in need of some high-octane oils from Southwest Texas.

Going to Storage

Some West Texas oil is going to storage daily. Humble Oil & Refining Company is running about 11,000 barrels more than it needs; however, it is taking only 75 percent of the allowable (line capacity) from the Wasson pool and only about this proportion from Duggan and Slaughter, as well. Its supply of gasoline is slightly lower than it was on February 1.

Gulf Oil Corporation, however, is in need of West Texas crude, P. O. Settle, company attorney told the commission. It needs 5000 barrels daily now and is willing to accept this from any field to which it is connected.

In the course of the Humble Oil & Refining Company's report, it had been suggested that the Wasson allowable be reduced to 31,000 barrels. The field now has an allowable of 38,000 barrels. The proposal was protested on the ground that a contract had been signed for a new line to the field which would be completed in 30 days and would be able to handle 15,000 barrels of oil.

During the course of the hearing, Commissioner Sadler announced that hereafter when operators requested an increased allowable for a certain grade of crude from some field, they would be required to supply the commission with a four-quart sample of the oil taken from the field under supervision of commission engineers to be used for testing.

Thompson and Sadler agreed that allowables should not be changed between statewide orders; however, they did not state definitely that changes would not be made in the future.

Various other operators requested small increases, but in most cases asked that allowables remain unchanged through April. Operators from the KMA area said the commission would be requested to reduce the allowable 6000 or 8000 barrels a day because of a pressure decline. Nominations for the next six months, by districts, are shown in the accompanying table.

Commissioner Lon Smith was unable to attend the meeting because of illness.

Michigan cuts two fields; flush peak has been passed

Allowables in two Michigan fields were reduced March 21 on orders of Supervisor P. J. Hoffmaster, after public hearings and reduction recommendations by the State Advisory Board.

The new order cut the allowable in the Redding, Clare County, field from 200 to 150 barrels per well daily, on a lease basis, and from 100 to 75 barrels in Freeman. The two fields are connected, but differentiated chiefly because of drilling units. Redding is developed on a 20-acre basis and Freeman on a 10-acre basis.

Testimony also was taken on New Salem and Overisel fields, in Allegan County, and Walker-Tallmadge in Kent and Ottawa counties. The board recommended present allowables of 100 barrels per well be left unchanged in these fields.

Testimony also was taken, for the first time, on the Wise field, Isabella County. No recommendation for the field, exempt since discovery in 1938, was made, and Hoffmaster said no order would be issued at this time. Twenty-one of the 28 producing wells in the field are on 20-acre units. The field averaged 67 barrels a day per well in February, and recovery to date is about 900 barrels per productive acre.

The reduction in the Redding-Freeman field will reduce runs about 1100 barrels per day from the average of 14,000 barrels per day in February. In the Redding area, production had been back voluntarily from 200 to 160 in mid-January.

It was brought out at the hearing that most all Michigan crude buyers have been drawing on storage for three months to meet requirements and that comparatively little oil is now in storage. Michigan now has practically no flush oil in reserve. In the Walker field, Kent and Ottawa counties, principal field in the state, as of March 11 there were 347 wells producing an average of 19,018 barrels per day and only 90 wells were making their allowable of 100 barrels. The field, now a year old, has recovered 1059 barrels per producing acre. Production is from Traverse at 1800-1900 feet.

Excepting comparatively small areas, the Redding field, Clare County, is the only other important flowing field in the state. It averaged 13,099 barrels per day in February from 78 wells. Sixty-four wells did or could make 176 barrels a day or better. Recovery to date is 2395 barrels per producing acre.

Testimony at the hearing indicated that unless new fields are opened the crude situation can be expected to grow tighter. It was indicated that present fields have reached their peak in flush production.

Associations

Houston A.P.I. dinner dance dates changed

The informal dinner-dance to be held during the Southwestern District meeting of the American Petroleum Institute in Houston will be on Thursday evening, March 28, instead of on Friday, March 29, as originally planned.

The affair will consist of a full-course dinner, dancing to two orchestras, and a floor show. Tickets, which are $3 per person, may be obtained by writing Frank Champion, of Byron Jackson Company, 6247 Navigation Boulevard, Houston.

The convention will hear such speakers as H. H. Anderson, vice president of Shell Oil Company; Walter B. Pyron, vice president of Gulf Oil Corporation; and E. DeGolyer. In addition, a varied program of technical papers has been arranged.

Schoeneck named chairman Ark-La-Tex chapter, A.P.I.

W. E Schoeneck, Ohio Oil Company, was named chairman of the Ark-La-Tex chapter, American Petroleum Institute, for 1940, at a chapter dinner meeting March 20 at Shreveport. He succeeds L. Moseley Moffitt, Triangle Drilling Company.

Other officers named for the year are: C. W. Hughes, Arkansas Fuel Oil Company, vice chairman; and Phil D. Baker, Standard Oil Company of Louisiana, secretary-treasurer.

The chapter voted to seek the 1941 session of the Southwestern division of the A.P.I. and will have the support of the East Texas chapter.

Feature of the March 20 chapter meeting was an address on the choice and maintenance of oil field engines by H. F. Shepherd, Lufkin Foundry & Machine Company.

Brown addresses I.P.A. group at Shreveport

Legislation pending before Congress, which affects the oil industry, was discussed in Shreveport March 20 by Russell B. Brown, general counsel of the Independent Petroleum Association, at a meeting of association members from North Louisiana and South Arkansas. B. A. Hardey, vice president of the association for North Louisiana, presided.

Among those present were Charles Van Vleck, Tulsa, field manager of the association; H. B. Fell, executive vice president of the association; N. T. Gilbert, association treasurer; J. K. Mahoney, vice president of the association for Arkansas; and O. C. Bailey, chairman of the Arkansas Oil and Gas Commission.

Interstate Oil Compact to Meet Oklahoma City April 5

A meeting of the Interstate Oil Compact Commission was called for April 5 at Oklahoma City by Governor Leon C. Phillips of Oklahoma, commission chairman.

Imports

Set limit on imports under reciprocal trade agreement

Imports of foreign oils subject to reduced excise taxes provided in the reciprocal trade agreement with Venezuela will be limited for the calendar year 1940 to a total of 61,892,000 barrels, equivalent to 2,599,464,000 gallons, it was announced March 22 by Commissioner of Customs Basil Harris.

The amount, as provided in the agreement, was arrived at as 5 percent of the total of crude petroleum processed in refineries in the continental United States in 1939, reported by the Secretary of the Interior as 1,237,840 barrels.

The Venezuelan agreement provided for a reduction from one-half to one cent per gallon in the excise tax on imported crude, topped crude and fuel oil, including gas oil, on an annual quota not in excess of 5 percent of the total runs to stills of the preceding calendar year. Imports above the quota are subject to the full rate of tax.

Under the most-favored-nation policy, a number of other countries, including the Netherlands, Colombia, Mexico and Peru, are entitled to share in any concessions given in the reciprocal trade agreements, and the quota, when set on December 12, last, was allocated among them on the basis of their share of our oil imports during the first ten months of 1939, a period selected because at that time receipts from Mexico were at a low level and it was not desired, in view of Mexican expropriations of American oil properties, to permit that country to share in the benefits of the pact to any greater extent than absolutely necessary.

Under that allocation, still in effect, Venezuela will be permitted to send in 71.9 percent of the quota. The Netherlands, including its over-seas territory, 20.3 percent; Colombia, 4 percent, and all other foreign countries, 3.8 percent.

Treasury slows oil imports at reduced excise rate

As imports of crude petroleum, topped crude and fuel oil from countries other than Venezuela, Netherlands and Colombia reaching two thirds of the full quota for 1940 during the period from January 1 to March 9, the United States Treasury Department March 20 ordered collectors of customs to release no further imports at the reduced excise-duty rate provided in the reciprocal trade agreement with Venezuela pending a determination of their quota status.

The department's action was based on a report from the Customs Bureau that imports from "other countries"—presumably entirely or almost entirely from Mexico—amounted to 66,467,292 gallons during the first ten weeks of the year.

"Under the quota provisions of the trade agreement with Venezuela," it was explained, "98,779,632 gallons of these commodities, the produce or manufacture of such other countries, may be entered, or withdrawn from warehouse, for consumption at the reduced rate of ¼-cent per gallon during the calendar year 1940. Imports for consumption in excess of the quota for the year will be dutiable at the full rate of ½-cent per gallon.

"For the administration of this tariff rate quota, the collectors of customs have been instructed that, effective March 21, 1940, entries for consumption and warehouse withdrawals for consumption covering these commodities, the produce or manufacture of such other countries, may be accepted at the reduced rate, provided the merchandise is not released pending determination of its quota status for duty purposes. If release of the merchandise is desired before such determination, importers will be required to deposit estimated duties at the full rate."

Action on divorce bills may come this session

Possibilities of action on divorce legislation for the oil industry before the end of the present congressional session were indicated March 22 with announcement by Chairman Henry F. Ashurst of the Senate Judiciary Committee of a subcommittee to which all divorce legislation would be referred.

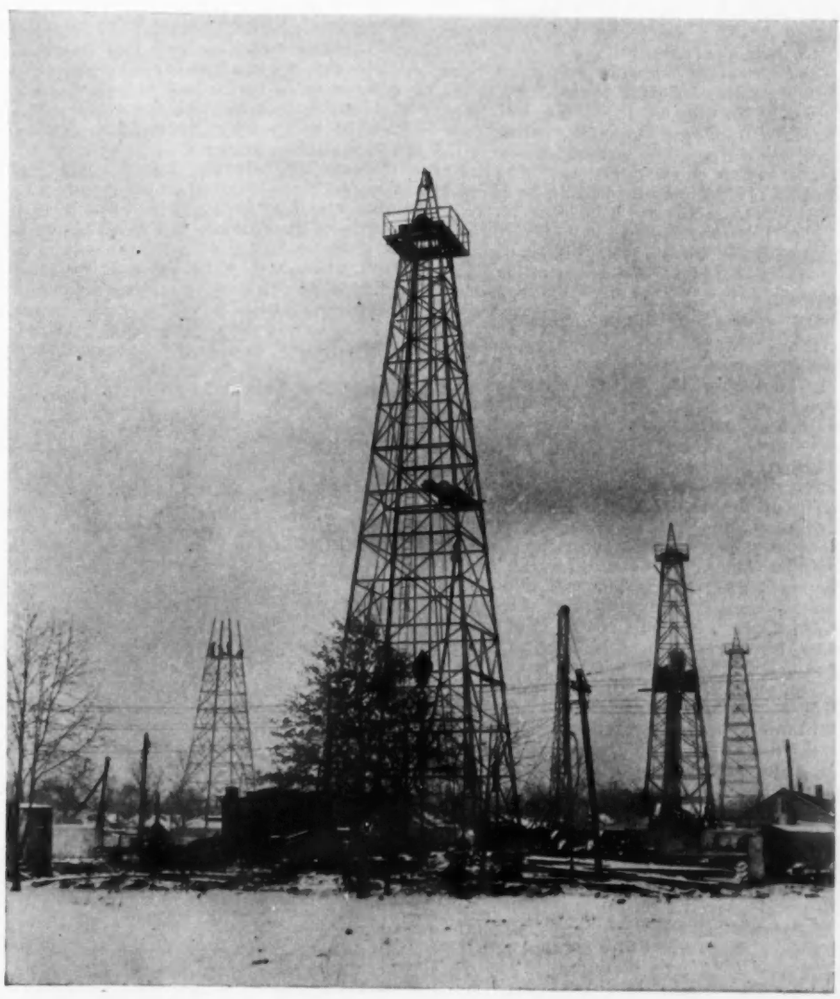
The subcommittee will consist of Senators Frederick Van Nuys, of Indiana, Carl A. Hatch, of New Mexico, and Edward R. Burke, of Nebraska, Democrats, and George W. Norris, of Nebraska, Farmer-Labor, and John A. Danaher of Connecticut, Republican.

Two divorce bills are pending before the Judiciary Committee, one calling for the divorce of marketing, and the other for divorce of pipe-line transportation from other branches of the oil industry.

Interior Department offers leases on 12,200 acres

Additional land from the 3,000,000 acres of public domain on which prospecting permits were canceled last December will be offered for lease April 1 by the United States Department of the Interior.

The offering includes approximately 12,000 acres in Oklahoma and 200 acres in Arkansas, held until the end of last year under approximately 20 prospecting permits which were not converted into leases as required by law.



—Corby J. Morris.

"Little Tulsa," an area just outside the limits of Centralia, Illinois, was given its name during a shallow drilling boom in 1938. It has again come into prominence with the current quest for deep production.

California A. P. I. Hears Oklahoma Governor on Federal Control Threat

CALIFORNIA oil men attending the spring meeting of the Pacific Coast Section of the American Petroleum Institute's Division of Production last week were given a sharp reminder that they must assist other oil states in circumventing federal control of the industry by Governor Leon C. Phillips of Oklahoma.

Speaking over a long-distance telephone hook-up from Oklahoma City, since press of business prevented his being present in person to deliver the main address at the section's evening banquet, Phillips invited California to join other oil states in defending the rights of the states in administering their own internal affairs.

The governor sharply criticized Secretary of the Interior Harold L. Ickes for sponsorship of the Cole bill now pending in Congress, and pointed out that while there is a general interest in conservation, there has been no public clamor for the oil business to be turned over to the secretary.

The bill, if enacted, would not only regiment the oil industry but would imperil our form of government, he warned.

Officers

R. N. McMaster, Chanslor-Canfield Midway Oil Company, was elected section chairman. He succeeds Howard C. Pyle, Union Oil Company of California, who was named chairman of the advisory committee.

Other officers elected were Eugene L. Davis, The Texas Company, vice chairman for the Los Angeles Basin; R. B. Hodgson, Tide Water Associated Oil Company, vice chairman for the Coastal District; D. T. Hoenshell, Kettleman North Dome Association, vice chairman for the San Joaquin Valley District; W. G. Corey, Pacific Gear & Tool Company, treasurer, and D. S. Kilgour, California Oil & Gas Association, secretary.

Named to the advisory committee, in addition to Pyle, are L. L. Aubert, Bankline Oil Company; Brude Barkus, B. & W., Inc.; A. H. Bell, Continental Oil Company; E. C. Bolton, Ohio Oil Company; L. A. Cranson, Honolulu Oil Company; J. F. Dodge, University of Southern California; E. G. Gaylord, Standard Oil Company of California; H. P. Grimm; E. B. Hall, Hall-Baker Company; W. L. Heater, Baroid Sales Corporation; Joseph Jensen, Tide Water Associated Oil Company; William Keck, Jr., Superior Oil Company; R. L. Keyes, The Texas Company; W. N. Lacey, California Institute of Technology; M. A. Machris, Wilshire Oil Company; Frank A. Morgan, Richfield Oil Corporation; R. C. Patterson, United States Geological Society; E. E. Pyles, Hancock Oil Company of California; C. P. Watson, Seaboard Oil Company; Harold T. Wyatt, Shell Oil Company, and William Whaley, Barnsdall Oil Company.

Phillips Charges Snooping

Terming Ickes and his department heads "swivel-chair bureaucrats," the Oklahoma governor charged them with becoming professional conservationists, who, in a longing grasp for power, seek to take over production of oil. From control of production it is but a simple step to control of refining, transportation and marketing, he declared.

Continuing, the governor declared:

"Agents of the Secretary of the Interior have been snooping around in California and in all of the oil producing states in an effort to find some evidence of waste to convict the states of gross wastage of petroleum and to justify this grab for power.

"The Cole bill was based upon the false premise that the oil producing states and the industry are wastefully producing petroleum and that the federal government should step in and take charge. Cloaked in the guise of a waste-prevention measure, it provides for the appointment of a federal commissioner with unlimited and dictatorial powers.

"Mr. Ickes and his department are the authors of the measure and appear to be its sole sponsors," Phillips added. "They do not contend that it will be beneficial to producers, large or small, nor is it contended that the bill will provide for the consumer a better or cheaper product.

"Since Mr. Ickes appears to be greatly alarmed that our petroleum reserves will soon be exhausted, we might expect, if the bill is enacted, that the broad powers granted would be used to greatly curtail production. This, of course, would curtail exploration and development, increase unemployment, and bankrupt producers. Curtailed production and additional burdens and expenses placed on the industry would result in higher prices to the consumer, and neither labor or the consumer has favored the measure."

Phillips reviewed the testimony of governors of oil states who appeared before the Cole committee when hearings were held in Washington and pointed out that they had branded the bill as a deliberate attempt to take over a great industry and supersede state authority.

Complimenting the industry for its conservation efforts in California and elsewhere, Governor Phillips said that long before the "swivel-chair conservationists" in Washington interested themselves in the subject they were improving the technique of finding, producing and saving petroleum and cooperating with the states in formulating conservation programs.

He strongly urged California to join with other oil states in the constructive work undertaken under the Interstate Oil Compact Commission, of which he is chairman.

"The bureaucrats are charging that Illinois and California are outlaw states," Governor Phillips said. "They are determined to take you and the rest of us over, and unless you do something about it, you may expect Ickes and his crowd to write a law for you and enforce it from Washington."

Abstracts of papers presented at the meeting follow:

R. N. McMASTER
Elected chairman, Pacific Coast Section, American Petroleum Institute Division of Production.

Trends In Allowables In California

By L. L. AUBERT
Bankline Oil Company

Since June 1, 1939, the allowable production for California has been held at a fairly constant figure, ranging from 588,000 barrels a day for June up to 599,000 barrels in October, 1939, and back to 590,000 barrels a day for March, 1940.

Although demand for crude petroleum and its products has varied somewhat in the period, averaging about 630,000 barrels a day, the allowable has

been maintained at a nearly constant and somewhat lower figure. Present inventories are still much larger than necessary for refining and marketing requirements.

Regardless of what the demand for crude petroleum and its products might be for the next year or two, we can expect no increase in the state allowable. A reduction in inventories is absolutely essential to place the industry in a sound economic condition. We have some estimates that demand may be 5 percent or 6 percent higher in 1940. However, in the face of this possible increase we must recognize that part of our Pacific foreign market may be eliminated if exports to Japan are cut off. This market amounts to about 77,000 barrels daily, and its elimination would decrease the state allowable by that amount.

It is our hope that we may be able to carry the allowable forward into the future at a reasonably constant level, as any violent fluctuations from a mean figure are very disturbing to an industry of this size. Individual well allowables are primarily dependent upon our state allowable.

The monthly allowable is the sum of the individual well allowables for wells capable of production of the first day of any one month. The individual well allowables are computed from a uniform allocation formula, based upon potential and depth of the well. With the exception of the top wells, all wells of similar depth and similar size receive exactly the same allowable.

On March 1, there were 18,814 wells in the state, of which 10,106 were marginal wells, 7935 intermediate wells and 773 top wells. Since June 1, 1939, the formula for the depth allowable or minimum has not been changed, but the power factor affecting the intermediate and top wells and likewise the allowables to top wells have been constantly lowered. The top allowable for March was 182 barrels daily.

Obviously the marginal wells have absorbed none of the reduction. The intermediate wells have been materially reduced and the top wells have received a drastic reduction, from 250 barrels a day to 182 barrels. In addition to the decrease in allowables by reduction of formula factors, marginal and intermediate wells have been further reduced by their indicated decline in potential.

In the past 10 months, 58,132 barrels a day have been taken from intermediate and top wells by reason of formula changes; 46,387 barrels daily from marginal and intermediate wells by reason of decline in potential; and 18,361 barrels taken from suspended or abandoned wells. This total of 122,880 barrels daily, plus an increase of 2086 barrels in state allowable, equals 124,966 barrels, or 21 percent of the state allowable.

This oil went to 971 new and recompleted wells brought in during the 10-month period, which were given allowables based on the formula in effect at the time.

It is unfortunate that the rate of drilling new wells is not in keeping with the rate of decline of old wells. This is not the case, nor does it seem possible that this can ever be the case, for various contractual obligations, lease requirements and offset wells are all contributing factors which cannot be controlled.

It we assume our present depth allowable is to remain the same for the balance of this year, and if we assume we are to continue the procedure of reducing the power factor and top allowable, it is safe to predict that by the end of this year the power factor will have to be reduced to .730 and the top allowable will have to be reduced to 135 barrels a day. However, if this procedure is carried out some strange results will become evident. By December, for instance, a 150-barrel well 12,000 feet deep will receive the top allowable of 135 barrels a day. This will be almost wholly made up of a minimum depth allotment. Likewise, a 315-barrel well 9000 feet deep will receive the top. It is hard to conceive of wells of this calibre receiving the same allowable as 2000-barrel wells.

Our present procedure of lowering top allowables and power factor eventually leads to giving too much credit for depth and insufficient credit for potential.

It is my opinion that the depth allowable should be gradually diminished and that the power factor should be gradually modified, especially as it affects the larger intermediate wells and the small top wells. Gradual modification of the power factor would have the effect of raising the required potential for top wells. I believe the minimum potential required for top wells should be about 1500 barrels a day.

The state allowable for at least the next year, cannot be raised; it may have to be lowered. The completion of new and re-completed wells, although on the decline, is still too rapid to be comfortably absorbed. The trend of the allowable of the individual well is definitely downward. How far it will have to go in this direction depends upon the program decided upon by the Central Committee.

The economic law of diminishing returns is really at work.

Application of Chemicals to Drilling and Producing Operations

By W. W. Robinson
The Texas Company

In the past 10 years drilling and producing operations have uncovered problems which cannot be solved by wholly mechanical procedures. High subsurface temperatures and their effect on drilling fluids and cements, hydratible shales, salt deposits, lost circulation, increasing permeability of limestone and a host of other obstacles tax the resourcefulness and ingenuity of the driller. In particular, deep drilling has demanded that every art and science be brought to bear, directly or indirectly, on many questions the answers to which will assist in making the search for oil more scientific. In 1932, only one well in the United States was drilled deeper than 10,000 feet; while in 1939, 215 wells exceeded that depth.

It is, therefore, not surprising that chemistry and chemical engineering are being applied to certain drilling and producing problems with the intent of lending material assistance. Unfortunately for the chemist, his work involves use of terms and procedures somewhat new to the oil field. He speaks of colloids, deflocculation, base exchange, polar molecules, pH, etc. It is only natural, then, that some should feel that chemistry may be all right for the refiner, but is still a bit too abstract for application to drilling and production. However, in less than 5 years strides have been made in many directions which have served to convince even the most skeptical that chemistry has come into the oil field to stay.

Even though application of chemistry is in its infancy, much has been done. This discussion could go on with a review of what has been done chemically in connection with emulsion-breaking, wax removal, brine disposal and water-flooding, but the conclusion is obvious that the chemist and chemical engineer and their wares are appearing more and more in the different channels followed by drilling and producing operations.

Some may level a criticism that certain of the developments are impractical. Such an impression is a reasonable one, but the only possible answer to it is, "Who can really be sure that a given development is impractical until it has been completely tested in practice?" The absurdity of today is often the commercial success of tomorrow. The most casual look at the refining industry will confirm this. Developments which were looked upon as laboratory curiosities a few years ago are now jostling with each other for commercial supremacy.

As far as the use of chemicals in the producing department of the oil industry is concerned one fact is evident: The outlines of an increasingly valuable chemical technology are becoming evident. What the final structure will be no one can rightly foretell but a reasonable prediction would be that what has already been accomplished will not be lightly tossed aside and more value will surely come.

Oil Well Cementing Factors Influencing Bond Between Cement and Formation

By P. H. Jones and Denis Berdine
Union Oil Company of California

In oil-well cementing operations, failures to obtain satisfactory results frequently are ascribed to channeling of the cement slurry, off centered casing, and presence of a mud cake between the set cement and the formation. In the latter case, the mud cake may constitute a region of weakness that may break down or shrink, thereby providing a channel for migration of water past the cement seal. Obviously many other factors, such as cement quality, selection of stratum at which the shutoff is made, fracture of set cement while drilling, etc., may influence greatly the success or failure of cementing operations. The scope of this investigation, however, was limited largely to studies of channeling, of the effects of mud cake on the bond between cement and formation, and of the relative values of various mechanical and chemical means for removal of mud cakes.

Experiments involving 42 test wells were made. Various muds, cement slurries, pumping procedures, wall scraping devices, cementing shoes, centering devices, casing movements, an-

nular velocities, and acid treatments were used.

Conclusions of this investigation may be summarized briefly as follows:

Channeling and chimney formation of cement in the annulus is unlikely in the immediate region of the shoe, but may occur near the top of the cement column.

Wherever cement slurry is applied opposite formations having appreciable permeability, a residual mud cake will remain between the set cement and the formation unless specific means are employed to effect its removal. The presence of collars, movement of the casing, or circulation of water may reduce the thickness of the mud cake slightly, but will not remove it completely.

Where the casing rests against the walls of the hole, residual cakes will be thicker than normal. There is a tendency for the cement slurry to be excluded from such regions of proximity, thus leaving longitudinal stringers of mud cake with no cement between the casing and the formation.

Three methods were found to be effective in removing mud cakes:

1—Hydraulic action by direct impingement of fluid jets (such as that induced by down-whirler shoes) against the walls of the hole.

2—Mechanical scraping by using suitable mechanical devices on the casing, and alternately raising and lowering the casing. This is effective only over areas where scrapers or scratchers make a bearing on the wall of the hole.

3—Acid treatment gave best results under atmospheric-pressure conditions. Laboratory tests at high pressure indicate but do not prove that effective mud cake removal under these conditions may be obtained.

Pioneering of Rotary Methods of Drilling in California

By L. B. Little
Standard Oil Company of California

Drawing on his experience with rotary drilling, the author recounted its inception and early development in Texas in 1903 and described difficulties that attended introduction of the new method of drilling in California in 1908. Anecdotes about early-day rotary operations and drillers were illustrated by a collection of slides depicting the infancy of rotary drilling in California.

Bottom Hole Control of Gas Production

By E. W. McAllister
Kettleman North Dome Association

Bottom hole chokes or flow controls were designed primarily for use in fields having an overlying gas cap which can be isolated from the lower oil producing sands. More and more installations are being made in fields of this type as operators become gas-conservation minded either because of legal aspects or in an effort to conserve reservoir energy.

Bottom hole chokes or flow controls are designed to permit passage of gas into the tubing string from the annular space between the tubing and the casing. The equipment differs from the pressure-differential and velocity-type flow or kickoff valves in that the flow of gas through the device is controlled by various sized orifices which may be changed or adjusted from the surface by means of tools run on a small wire line.

Location of this equipment in the tubing string is fixed and cannot be changed without raising or lowering the tubing; hence, before its installation it is necessary for the operator to predetermine as nearly as possible the location of the choke and the auxiliary equipment so as to accomplish the results desired.

At present, there are two general types of controls in use; one composed of a landing nipple or shoe constructed with a recess for locking the removable control device or choke in place. The landing nipple is inserted in the tubing string between tubing collars and has four ½-inch fixed ports for the passage of gas through the shell. The other type in general use is composed of a cylindrical shell containing an adjustable sleeve. The shell has four ½-inch fixed ports for passage of gas into the tubing. Various sized ports in the adjustable sleeve can be matched with the ports in the shell, thus controlling the entry of the gas. The control ports in the sleeve vary in size from a minimum opening of one ⅛-inch port to a maximum opening of four ½-inch ports.

The most common use of bottom-hole choke or flow control is to install it in the tubing string opposite a gas zone that has been isolated from a lower oil producing sand by means of a packer run on the tubing and set in a cemented blank section between the two zones. Gas is admitted to the flow string via the flow control, and gas lifts the oil, which enters from below, to the surface.

Accompanying tabulated data gives results obtained from a packer and flow-control installation made in Kettleman Hills. The packer was set at 7600 feet on 3-inch tubing in a cemented blank section between the gas and oil zones, with the flow control located at a depth of 7439 feet. Tests were made before and after the equipment was installed and for various openings of the flow controls.

Inasmuch as subsurface conditions vary in each well these data are characteristic of this installation only.

Production Barrels	Gas/Oil Ratio	Pressure in Pounds to Square Inch		REMARKS
		Tubing	Casing	
920	10400	180	810	Producing from all zones; no packer or flow control
940	990	145	Packer	Producing from below 7600 feet only, (packer).
1070	2620	225	860	Flow control orifice 11/64 inch diameter.
967	3345	430	830	Flow control orifice 13/64 inch diameter.
1228	3415	225	800	Flow control orifice 15/64 inch diameter.
606	4930	580	880	Flow control orifice 11/64 inch diameter.
1010	900	210	...	Flow control orifice closed.
785	4220	450	800	Flow control orifice 5/32 inch diameter.

Thorough Oil Industry Census

[*Continued from page 39*]

from the source of supply. Up-to-date figures on employment in practically all these activities will be revealed in the forthcoming census.

Production of crude oil, natural gas and natural gasoline reached a total value in 1937, according to data compiled by the Census Bureau and the Bureau of Mines, amounting to $1,733,922,000, and that of crude oil run to the stills of $2,546,746,000. Production of fuel oils that year, recorded in the Census of Manufactures, amounted to 19,243,713,721 gallons, 17 percent more than in 1935 and 38 percent more than in 1933. Gasoline production reached a total of 22,626,325,189 gallons, a gain during the same periods of 18 and 29 percent; and production of lubricating oils totalled 1,517,102,553 gallons, approximately the same gain as that of gasoline.

How will the 1939 figures now being assembled compare with those for 1937 and previous years?

For its cooperation with the Census Bureau in compiling the information, the industry will be repaid many times over. To production men the data will be indispensable in gauging their operating efficiency—their production and output per worker, their cost of drilling and equipping their wells. To marketing and sales staffs the figures on output, especially when coupled with the data on sales and consumption in the Census of Business and the Census of Manufactures, will be immensely valuable as a basis for determining the trend of business, the potentialities of the various markets, and in planning sales drives.

How quickly the facts and figures can be compiled depends to a large extent upon the quick response and cooperation of those who supply the answers to the questions submitted. With their full cooperation all the information should be in the hands of the Census Bureau by the end of April or May, and the bulk of the information should be published by late summer or early fall.

As in all census undertakings, the answers to the questions are strictly confidential. The same law that requires reporting to the Census Bureau protects all companies and persons by prohibiting the Bureau from disclosing individual facts, including names and identity, even to another government agency. Only sworn census employes will see the reports. The data collected will be used solely for preparing statistical information concerning the nation's population, resources and business activities. Assurance is thus given that the reports will not be used for purposes of taxation, regulation or investigation.

GEORGE E. EDGETT, in charge of the gasoline division of the production department of The Carter Oil Company, last week was presented with a 30-year service button from the Standard Oil Company (New Jersey).

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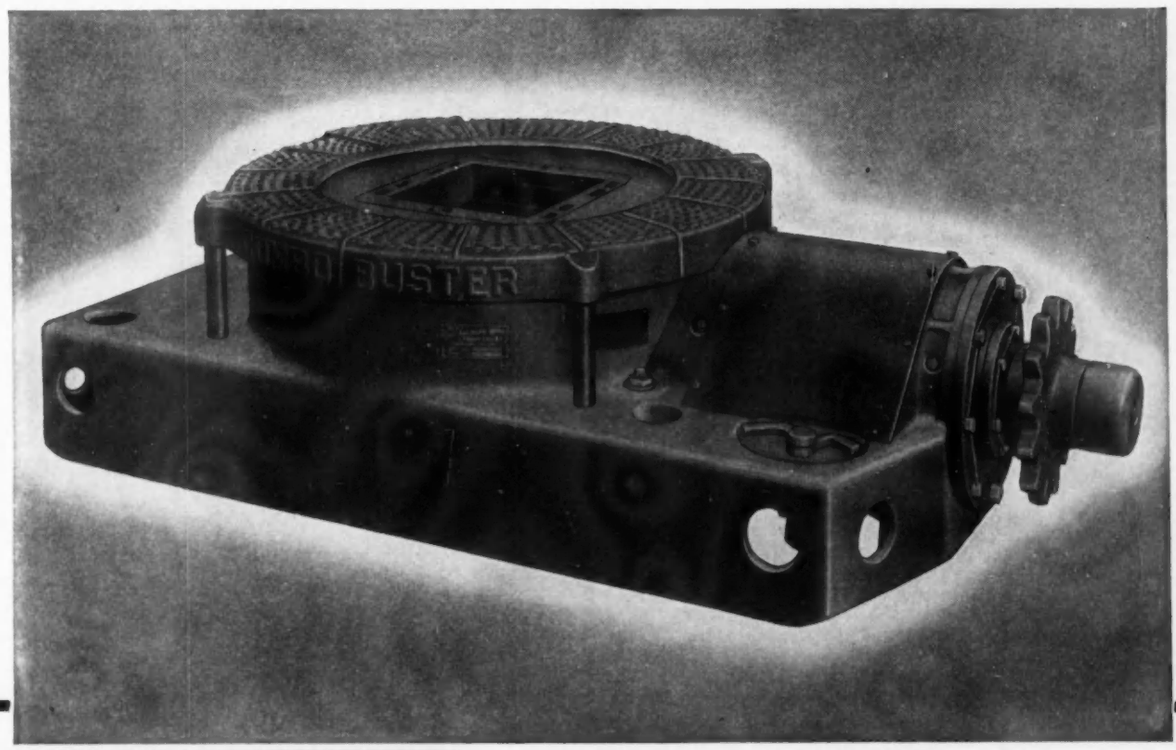

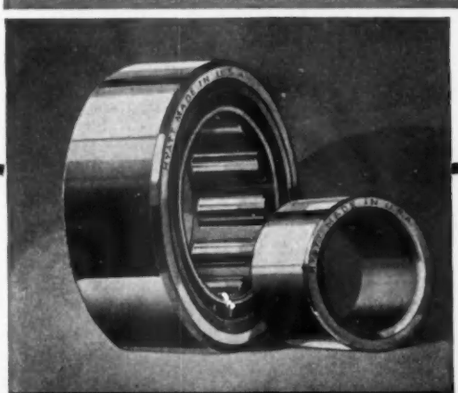

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Production and runs of crude oil up further

Further increases have occurred in both crude production and refinery runs, and gasoline stocks have expanded further, although withdrawals are still being made from stocks of fuel oils.

United States crude oil production increased more than 60,000 barrels in jumping to 3,890,050 barrels daily in the week ended March 16, and then was within 20,000 barrels of the all-time peak of 3,909,400 barrels that was reached last August. The new production rate was 16.5 percent higher than that in the corresponding week last year.

Crude runs to stills were stepped up 50,000 barrels to an even 3,500,000 barrels daily in the week of March 16, from 3,450,000 barrels the previous week, and then were 9.7 percent higher than the daily average of March last year.

Gasoline Situation

Production of gasoline was reduced 88,000 barrels for the week as output in the 7-day period was 11,372,000 barrels. But stocks continued to increase, having risen 1,183,000 barrels, to a new all time peak of 100,616,000 barrels. That was the first time in history that the gasoline inventory had exceeded 100,000,000 barrels. The large supply was 20 percent greater than that of 86,332,000 barrels held a year previously. Demand for gasoline does not show nearly so large an increase over a year ago.

Fuel Oils

Stocks of gas oil and distillate fuel were reduced 485,000 barrels further in the week of March 16, and at the lower level of 24,075,000 barrels were about 3,200,000 barrels or 12 percent smaller than at the corresponding time last year. Yet demand has been running sharply higher.

Stocks of residual fuel oil reversed their recent trend, having come down 267,000 barrels to 103,588,000 barrels. That was about 7,000,000 barrels or 6½ percent less than the supply held a year earlier. Those heavy oils, as well as heating oils, have been in larger demand than a year ago, and stocks therefore are comparatively small in relation to market requirements.

Crude oil stocks again increased in the week ended March 9, having risen more than a million and a half barrels to 245,762,000 barrels. The crude inventory is, however, about 10 percent smaller than a year ago.

PRODUCT PRICES

	Range Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
62 Octane and under	3⅝	4⅛	...	...
63-66 Octane	4	4⅜	...	...
67-69 Octane	4¼	4¾	+⅛	...
70-72 Octane	4½	5	+¼	...
Mid-Western Tank Car:				
62 Octane and under	3⅝	4⅛	...	...
63-66 Octane	4	4⅛	...	...
67-69 Octane	4¼	4¾	...	...
70-72 Octane	4½	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F. O. B. Group 3	1¾	...	—¼	...
F. O. B. Breckenridge, Texas	1¼	1½	—¼	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3⅞	4¼	+⅛	...
42-44 water white	4	4⅜	+⅛	...
Mid-Western Tank Car:				
41-43 water white	3⅞	4¼	...	...
42-44 water white	4	4⅜	...	...
FUEL OILS				
Mid-Western Tank Car:				
Range Oil	3¾	4	...	...
Gas and Fuel Oils:				
No. 1 Prime White	3⅝	3⅞	...	...
No. 1 straw	3½	3⅝	...	...
No. 2 straw	3⅜	3½	...	...
No. 3	3¼	3⅜	...	...
No. 5 (per bbl.)	70	75	+5	+5
No. 6 (per bbl.)	45	55	...	...

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[5]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[8]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[9]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[8]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[1]3,650,000	[2]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 3	3,498,800	3,395,000	239,380,000	89,337,000	26,861 000	102,536,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	102,344,000
February 17	3,717,950	3,570,000	238,928,000	93,985,000	25,876,000	103,424,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 2	3,798,250	3,445,000	244,126,000	98,364,000	25,015,000	103,521,000
March 9	3,828,550	3,450,000	245,762,000	99,397,000	24,560,000	103,825,000
March 16, 1940	3,890,050	3,500,000	.....	[1]100,616,000	24,075,000	103,588,000
March 18, 1939	3,340,000	[3]3,191,000	[4]272,852,000	86,332,000	27,268,000	110,716,000
Change in past year	+16.5%	+9.7%	—9.9%	+19.9%	—11.9%	—6.4%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, March 11, 1939. [5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] March, 1939, daily average. [9] Lowest since October 1922, due to the shutdown of six Mid-Continent states.

Gasoline and kerosene firm as spring begins

The beginning of spring has given strength to the markets for both gasoline and kerosene, as increased motoring is anticipated, along with agricultural activity.

The market for heavy fuel oil also has become stronger, perhaps because of accumulating evidence of a flattening out of the decline in industrial activity, which may be followed in the spring by a gradual business upturn.

Crude Market Steady

The crude oil markets have remained generally steady in the face of sharply expanded production this month, and encouragement has been offered through the announced intentions of Texas conservation officials to promulgate relatively strict allowables in April, a course that should result in similar strict control in other Mid-Continent states.

The chief danger of important overproduction is in unprorated Illinois, but there are indications that that state may be rapidly approaching its peak, after which a natural decline will prevent uneconomic output.

Gasoline Market

Gasoline stocks apparently have risen near to their peak for this spring, additions in recent weeks having been comparatively small. The 1,219,000-barrel addition in the week ended March 16 pushed the gasoline inventory up to 100,616,000 barrels, a new high; but additions in the latter half of March usually are not great, after which withdrawals may be expected, in response to seasonally expanding consumption.

Gasolines of lower octane rating were generally unchanged in price last week at Mid-Continent refineries, but materials of higher octane numbers were no longer available at former prices, minimum quotations having been marked up ¼ cent a gallon.

Other Products

Natural gasoline continued in little demand, and prices sagged further, although they already were at extremely low levels.

The lowest prices quoted on kerosene by Mid-Continent refiners were ⅛

When Drake Brought in his Well on Oil Creek ... Jarecki was already 7 years old

From a Tintype of Drake's Original Oil Well

THERE were no oil country stores then. There was no oil country. But Jarecki representatives had called on Col. Drake and his associates while they were drilling the first well. This company sensed at once the possibilities and began to make materials to supply the new industry.

JARECKI opened its first branch store in 1867. Since then, this family-owned organization has served the oil industry continuously in the oil fields of the East and Middle West. JARECKI is the oldest oil field supply company in the world which has operated continuously under one management.

JARECKI has kept pace with the oil industry throughout its amazing career. The growth of our valve and fitting manufacturing business and of our oil country distributing service has been steady and sure, because it has been founded on intelligent service to this great and always rapidly growing industry. Today JARECKI is one of the largest manufacturers of valves, fittings, and oil field specialties and operates 38 oil country stores strategically located to best serve the industry throughout its extent from the Atlantic to the Rocky Mountains.

If you haven't tried this time-tested service you should do so.

Jarecki Store at Clarendon, Pa., oldest oil field supply store in the world in continuous operation, with possibly one exception.

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cent a gallon above the minimum prices that had been asked a week earlier, as supplies became increasingly scarce.

In both the Pennsylvania and Mid-Continent markets, lubricating oils have continued somewhat unsteady, following some decline of prices. Exports have lagged lately, and hoped-for resumption of the brisk buying of foreign purchasers so far has not materialized. Domestic purchasers, meanwhile, have been buying only their immediate requirements, apparently thinking that prices may come down further.

Federal petroleum tax collections running high

February collections of the federal gasoline tax totaled $18,392,569, a decline of more than $400,000 from the $19,228,329 reported for January but nearly $2,000,000 above the $16,427,083 secured in February, 1939, it was reported March 20 by the United States Bureau of Internal Revenue.

Collections from the tax on lubricating oils showed a slight increase over the preceding month, $2,636,430 against $2,615,468, and was $500,000 above the $2,129,468 collected in February of last year.

Returns from the tax on pipe-line transportation showed little change, totaling $1,009,275 against $1,049,642 in January, and $1,092,781 in February, 1939.

Bureau records disclosed that gasoline-tax collections are running about $1,500,000 a month heavier than a year ago. Total receipts for the first eight months of the Treasury's fiscal year, which began last July 1, were placed at $156,047,996, an increase of $12,962,521 over the $143,085,474 reported for the corresponding period a year ago.

Lubricating-oil tax collections for the period were $21,354,661, against $21,091,401 a year ago, an increase of $263,259, and returns from the levy on pipe-line transportation were $1,333,689 against $1,308,751, an increase of $35,973.

Natural gasoline production drops during January

Natural gasoline production in January declined to a daily average of 5,786,000 gallons from 6,056,000 gallons in December, but remained slightly above the January, 1939, average of 5,777,000 gallons, according to the monthly report of the United States Bureau of Mines.

Total output for the month was reported as 179,382,000 gallons, against 187,740,000 gallons in December and 179,088,000 gallons in January of last year. The most outstanding decreases during the month were in the Seminole, East Texas and Kettleman Hills districts.

Stocks at refineries increased during the month from 76,566,000 to 81,900,000 gallons, but those at plants and terminals declined from 109,116,000 to 106,092,000 gallons, it was reported.

W. A. WATSON, Humble Oil & Refining Company farm boss, has been promoted to assistant district superintendent in the Hobbs, New Mexico, district, and M. M. Rogers, farm boss, has been promoted to assistant district superintendent in the Wasson district, West Texas division.

January runs up 22,000 barrels from previous month

Runs to stills in January averaged 3,436,000 barrels a day, 22,000 barrels above the December average and 223,000 barrels above that for January, 1939, it was reported last week by the United States Bureau of Mines.

Total runs for the month were 106,530,000 barrels, 371,000 barrels in excess of refinery receipts of 106,159,000 barrels of crude oil. Receipts at refineries included 104,209,000 barrels of domestic and 1,950,000 barrels of foreign oil. Daily average imports were 63,000 barrels, 12,000 barrels under December.

As a result of runs being heavier than receipts, stocks of crude oil at refineries declined during the month from 49,215,000 to 48,789,000 barrels, the Bureau said.

End Mid-Continent Petroleum Company C.I.O. strike

The 15-month strike called by the C. I. O. against Mid-Continent Petroleum Corporation at its Tulsa refinery was ended last week.

Under terms of the agreement, strikers not discharged by the corporation, numbering 309, will be returned to available jobs, on the basis of length of service, experience and ability, as vacancies occur. Cases of discharged workers are to be considered within 60 days.

W. A. SCHAEFFER, JR., assistant vice president of production for Shell Oil Company, St. Louis, is making an inspection tour of Mid-Continent properties.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (March)	State Allowable in Mar.	BARRELS DAILY FOR WEEK ENDED Mar. 23	Mar. 16
TEXAS—				
Texas Panhandle	.....	.....	79,900	79,600
North Texas	.....	.....	106,200	106,700
West Central Texas	.....	.....	33,300	33,600
West Texas	.....	.....	272,100	273,600
East Central Texas	.....	.....	90,150	80,250
East Texas Field	.....	.....	397,500	407,600
South Texas	.....	.....	261,350	257,050
Texas Gulf Coast	.....	.....	252,350	259,300
Total Texas	1,330,600	1,490,370*	1,492,850	1,497,700
CALIFORNIA—				
Long Beach	.....	.....	45,000	45,800
Midway-Sunset	.....	.....	45,700	59,400
Kettleman Hills	.....	.....	46,700	47,300
Wilmington	.....	.....	85,200	85,000
Others	.....	.....	376,400	383,900
Total California	587,100	592,000†	599,000	621,400
ILLINOIS—				
Salem	.....	.....	283,450	264,800
Louden	.....	.....	77,000	75,500
Other New Pools	.....	.....	78,200	79,750
Old Pools	.....	.....	8,600	9,450
Total Illinois	329,700	.....	447,250	429,500
OKLAHOMA—				
Oklahoma City	.....	.....	103,150	93,950
Seminole Area	.....	.....	107,300	100,050
Others	.....	.....	214,425	222,375
Total Oklahoma	420,300	420,300	424,875	416,375

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (March)	State Allowable in Mar.	BARRELS DAILY FOR WEEK ENDED Mar. 23	Mar. 16
LOUISIANA—				
North Louisiana	.....	.....	68,200	68,250
South Louisiana	.....	.....	214,900	215,050
Total Louisiana	253,300	277,412	283,100	283,300
KANSAS	153,900	165,000	180,150	176,750
NEW MEXICO	103,200	114,000	114,100	113,750
EASTERN STATES—				
Pennsylvania Grade	.....	.....	75,100	74,300
Others, Eastern	.....	.....	24,000	23,900
Total Eastern States	104,600	.....	99,100	98,200
MOUNTAIN STATES—				
Wyoming	60,600	.....	70,500	69,500
Montana	15,200	.....	17,050	16,750
Colorado	3,500	.....	4,000	3,950
Total Mountain States	89,300	.....	91,550	90,200
MICHIGAN	64,800	65,000	64,750	63,900
ARKANSAS	65,500	70,000	69,850	69,700
MISSISSIPPI	1,300	.....	8,100	8,825
INDIANA	7,100	.....	11,100	10,500
‡Total 8 Prorated States	2,978,600	3,194,082	3,228,675	3,242,875
Total United States	3,500,600	.....	3,885,775	3,880,100

* Net daily average, considering Saturday-Sunday-Wednesday shutdowns in East Texas.
† Recommendation of Central Committee of California Oil Producers.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Michigan, Arkansas.

Wherever you drill with bits set with HAYSTELLITE INSERTS and hard-faced with HAYSTELLITE TUBE ROD you get more footage of out-to-gauge hole and your bits are well-fingered when pulled. INSIST on HAYSTELLITE PRODUCTS for performances like THESE

SOUTHERN LOUISIANA—This bit, hard-set with Haystellite tungsten carbide inserts and hard-faced with Haystellite tube rod, was still well-fingered and only slightly out-of-gauge when pulled after drilling 4,600 feet through sharp sand formation—good bit performance for this field.

CADDO PARISH, LA.—This 12¼-inch bit, hard-set with Haystellite inserts and hard-faced with Haystellite tube rod, went in at 289 feet and was still well-fingered and drilling out-to-gauge hole when pulled at 1,499 feet — over 1,200 feet through boulders, shale, and sharp sand.

LOMITA, CALIF.—This 12¼-inch bit, hard-set and hard-faced with Haystellite tungsten carbide products, was well-fingered and out-to-gauge after making 925 feet in sandy shale—good footage for this field.

CANAL FIELD, CALIF.—This 14¾-inch bit was still drilling out-to-gauge hole when pulled. Only 17 bits, all hard-set and hard-faced with Haystellite products, were required to drill 7,250 feet in 15 days—20 feet per hour.

• • •

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WORLD-WIDE DEVELOPMENTS

Edited by WM. V. GROSS, Associate Editor

Australian wildcatting again starts from scratch

Australian wildcatting in 1940 started again from scratch as nothing capable of commercial production was developed by the several tests drilled throughout that continent in 1939.

Government and private interests continue preliminary geological work as well as core drilling in Victoria, with other activity scattered throughout Western Australia, South Australia, New South Wales and Queensland, according to a communication from W. Baragwanath, director of the geological survey at Melbourne who is responsible for the following information.

Following a detailed topographic and geological survey in the Kimberley region of north-west Western Australia, a test bore was commenced at Nerrima, 200 miles southeast of Broome, during 1939. By the end of the year the bore had reached 1240 feet, but difficulty was experienced through caving in the Noonkanbah series, and some delay was caused. Boring will be resumed as soon as the caving is overcome. No oil or gas has been recorded, but the objective horizon has not yet been reached.

Another bore was started in Mount Gambier in South Australia during August, 1939, and had reached 552 feet by the end of the year. Boring is still in progress but no traces of oil or gas have yet been reported.

Victoria Busy

In Victoria only one new well was completed in Lakes Entrance district, bringing the total number to 40. This bore, known as the Imray well, reached 1273 feet, entering the glauconitic oil-bearing stratum at 1253 feet and producing oil at the rate of about seven gallons per day. Drilling was suspended in August, 1939, but the well is open pending investigation into the possibilities of an air pressuring scheme.

A bore was commenced at Metung, west of Lakes Entrance, in February, 1939, and had reached a depth of 1550 feet at the end of the year. Some dry gas, water, and traces of oil were reported, but boring is being continued. No. 2 bore by the same company reached a depth of 500 feet by the end of December and is still drilling.

Other tests in Victoria, all started during 1939, are situated at Lake Boga, Portland and Nelson, where depths of 735 feet, 1500 feet and 1480 feet, respectively, had been reached by the end of the year. All are still in progress, although the Lake Boga bore entered granite at 631 feet.

A wildcat at Dutson, in the Sale district, was drilled to 1670 feet in 1939 without revealing any oil or gas.

Government Program

The government scout drilling program, which was started in 1936, to obtain details of the structure of the Gippsland region, was carried on during 1938 and 1939 and continues today. The total footage at the end of 1939 was 45,000 feet in 35 bores, none of which yielded any oil or gas. Three of these bores were drilled with a modern rotary plant imported in 1938 by the Commonwealth government, and in each case the full sequence of Tertiary beds was passed through before entering older rocks in which the possibility of finding oil is regarded as negligible. At the first bore, south of Bairnsdale, 3246 feet was reached, proving Jurassic sandstone at a depth of 3158 feet. The second bore, easterly of Sale, entered Silurian beds at 3443 feet and drilled to 3560 feet. The third bore, near the coast at Paynesville (south of Bairnsdale) entered Jurassic beds at 2966 feet and drilling ceased at 3111 feet. The scout drilling campaign is now concentrated in the Lakes Entrance district.

As to New South Wales, work at the Kulnura bore, in which several gas horizons had been penetrated, was resumed early in 1938, but no further discoveries were reported to a depth of more than 6000 feet. A bore at the Balmain colliery, near Sydney, was taken over by another company in December, 1938, with a view to commercial gas production. Acid treatment led to increased yields of dry gas at a pressure of about 80 pounds per square inch.

Arcadia Disappointing

In Queensland two bores which were drilled in 1935 and 1936 were resumed in 1938 at Hutton Creek and Arcadia, north of Roma. Wet gas was recorded in the Arcadia bore, but the results have proved disappointing and work was stopped by the end of 1939. The Hutton Creek bore was deepened to 4688 feet in 1938, but further drilling was suspended until gas horizons below 3700 feet were thoroughly tested. No recent reports of this work have been published.

Following discovery of a closed structure at Mt. Bassett, near Roma in 1937, the Roma Blocks Company commenced No. 2 in 1938. The bore reached a depth of 4045 feet and traces of oil and quantities of gas were reported. No. 3 was in progress at the end of 1939, when it had reached 2960 feet.

No drilling was reported in Tasmania.

W. J. Cushman, warehouseman in Rio de Oro, Barco concession, Colombia, wearied of ordinary table fare. Visits of hostile Motilone Indians always are unannounced . . . hence, the rifle.

Nomads to act as helpers to foreign show visitors

Nomads, having been appointed by officials of the International Oil Exposition to be held in Tulsa May 18-25 as hosts to foreign delegates, have arranged for two international registration booths, one in the Tulsa Building and one in the Foreign Delegation Building on the grounds, for the convenience of visitors from abroad. In the latter will be provided secretarial, telephone and telegraph service for them.

The Nomads will assist foreign representatives in their housing problems, in securing free transportation for business purposes, and in arranging special tours of inspection to nearby oil fields and refineries.

The organization plans to provide guides from its membership to direct foreign visitors to various equipment, methods and processes which foreign visitors may wish to see.

No entertainments other than of a business nature will be undertaken by the Nomads except a banquet in honor of the foreign delegation to the exposition.

England slows shipment of lube oil to three nations

No navicerts will be issued for the time being by the British government for shipment of lubricating oil to the Netherlands, Belgium or Denmark from the United States, the British embassy in Washington informed certain oil companies last week.

In thus broadening the blockade England is lessening the chances of such shipments getting to Germany. The embassy stated a British survey indicated the three countries involved showed they had sufficient lubricating oil stocks on hand to last for several months.

U. S. FIELD OPERATIONS

THE Louisiana Gulf Coast obtained its first two new fields of the year last week. A Lafourche Parish wildcat flowed 242 barrels of 32-gravity oil in 12 hours from 11,300 feet through various chokes. An Iberia Parish well started at 7½ barrels of 35.6-gravity oil an hour through 7/64-inch choke. Several other wildcats were showing for field openers, while two fields had new sands.

Heavy salt water showing with a small amount of oil during test of 30 feet of Wilcox sand saturation in a Wharton County wildcat, Texas Gulf Coast, was discounted as possibly channeling up to the producing sand. It flowed 15 barrels of fluid an hour, 95 percent salt water, through ¼-inch choke. The wildcat is 80 miles from Wilcox production.

Three miles from production in Seminole County, Oklahoma, a wildcat filled up 2300 feet with oil during a drill-stem test of Wilcox pay. A Creek County wildcat was showing for a small Prue sand pool-opener.

The Kansas City-Lansing lime paid off with 70 barrels of 32-gravity oil during a 7-hour pumping test on a wildcat in Sedgwick County, Kansas. Another wildcat in the same county promised a new gas pool with production from the Mississippi lime.

An Indiana wildcat was about to be abandoned below objective pay when oil rose 975 feet in the hole from an unidentified horizon. It is 4 miles from production in Gibson County.

Frio sand wildcats testing in San Patricio and Nueces counties promised new fields for Southwest Texas. Kelsey field of Starr County was extended more than a mile west.

A Montague County wildcat, North Texas, that precipitated an intensive lease and royalty play during recent weeks, tested 240 barrels of 47-gravity oil in 3 hours through choke, justifying original forecasts of a big well. It established a new depth record for the section at 5704 feet. The lease play will result in several new wildcats for the county during the next few months.

Illinois added a new McClosky lime pool in Edwards County with initial production estimated between 150 and 300 barrels daily. A Richland County wildcat a mile south of production was flowing by heads from McClosky. A show in a Salem field well may be produced to give the state's most prolific field its sixth oil horizon.

Illinois

New field in Edwards County; Richland wildcat shows good

Centralia, Ill.—A new McClosky lime pool was opened in Edwards County, 2 miles south of Albion, when Noah & Morrison's Huston Barnes 1, SE NE NE 24-2s-10e, elevation of 494 feet, flowed through ¼-inch choke, with production estimated at from 150 to 300 barrels a day. The test was perforated with 48 shots in McClosky at 3123-33 feet, and electric test also revealed 21 feet of saturation in Waltersburg sand at 2378-98 feet.

A Richland County wildcat, one mile south of the Dundas field, Dyson-Anderson's Ash 1, NW SW 18-4n-10e, was flowing by heads at the rate of 225 barrels a day after a 500-gallon acid treatment. It is testing McClosky lime at 2928-39 feet, total depth 2943 feet.

Pumping equipment at another pool-opener, Mode and associates' Keneipp Heirs 1, SE SW SE 19-1s-12w, Wabash County, near Mt. Carmel, is to be adjusted for additional testing. The well pumped about 50 barrels of oil in 24 hours, although the hole was almost full of oil. It is producing from Rosiclare at 2359-63 feet.

A Jefferson County wildcat, Magnolia Petroleum Company's Lettie Jones 1, NE NE NE 10-3s-2e, was drilling at 2110 feet. The same firm's Bruns 1, wildcat in Perry County, SE SE SE NW 15-4s-13w, was drilling below 1050 feet.

In the Lake Centralia-Salem pool of Marion County, W. C. McBride, Inc., Lee 20, NE NE NE SE 29-2n-2e, was cleaning out to test a show of oil in Salem lime at about 2393, following a squeeze job early in the week to shut out bottom hole water. If successful, the test would give the field a sixth productive level. The pool's north Devonian outpost, Kingwood Oil Company's Shanafelt 4-C, SE SE NW 16-2n-2e, was to gun-perforate casing to test a Devonian show at 3596 feet. Kingwood's test topped the formation at minus 2926 feet, 65 feet lower than the field's lowest productive Devonian well. In the south end of the field, Hollingsworth's Kalkbrenner Strip 11, Section 5-1n-2e, completed several days ago, was given a 120-quart shot of nitro from 3400-45 feet, which increased production from 150 to 1100 barrels daily. Previously the well had been acidized with 6000 gallons. Nearly all sand wells are shot in the lake pool, but the Kalkbrenner test is probably the first Devonian lime producer to be given a nitro shot.

Two Devonian tests in White County, where the formation has not been tested, were drilling. Phillips Petroleum Company's Garr 1, 660 feet from north line and 330 feet from south line, 31-4s-11e, was drilling at about 4500 feet; Kingwood Oil Company's Martin 1, NW SW NE 13-7s-8e, which topped Aux Vases at 2835 feet and Fredonia at 2902 feet, was drilling below 3600 feet.

In the Centralia Townsite field of Clinton-Marion counties, a west outpost, Algona Oil Company's Marshall 1, 200 feet from south line and 221 feet from east line, SE 12-1n-1w, which found Devonian pay at 2929-39 feet, completed a fishing job to remove three strings of tools and was cleaning out. While tools were in the hole the well was flowing naturally. Hawley Oil Corporation's Storer, Lot 2, Block 41, original town, on production for more than seven days, has averaged about 1200 barrels a day from 2905 feet. Other completions in the field included Brown's Fortney 3, 850 feet from south line and 130 feet from east line, SE 12-1n-1w, which flowed 1600 barrels initially from pay at 2910-16 feet; and Weidler and Scott Oil Securities 1, 800 feet from east line and 750 feet from north line, NE 13-1n-1w, 1100 barrels in 24 hours.

In Fayette County, where the Louden and St. James fields are located, there were 15 completions during the week, including 12 wells and three dry holes.

Sohio doubles crude pipe lines during 1939

Pipe line holdings of Standard Oil Company of Ohio were increased from 870 to 1663 miles during 1939, President William T. Holliday told stockholders in his annual report. Purchase from Tide Water Associated Oil Company of the Illinois-Ohio section of its old line accounted for 417 miles of the increase.

Changes in the company's crude line were in accordance with a shift in the company's source of crude from southwestern states to Illinois, Indiana, Kentucky, Ohio and Michigan.

3054 feet. Plugs were penetrated to 3090 feet. Two outposts are being drilled near Prusa pool. G. W. Hinkle moved in tools at Krautwurst 1, CNL NE SE 34-16-11w, a mile from production, and Gore & Simpson have a rig up at Burmeister 1, CNL NW SE 27-11-16w, ½ mile east of the pool.

E. B. Shawver et al's Davis 1, NE NW NE 21-30-4e, an extension test ½ mile south of Rock pool, Cowley County, reported good saturation in Bartlesville sand at 2751 feet and will test.

Skelly Oil Company's Rein 1, CWL SW SW 25-14-14w, ½ mile north of basal sand production in the Gurney South pool, Russell County, tested 593 barrels daily from the sand at 3139 feet. Upper pays in the field include Topeka lime, Lansing-Kansas City group and Pre-Cambrian. Schneider & Pulse et al's Ernsting 1, CEL SE SW 6-20-11w, in the center of a triangle consisting of 3 pools, Ernsting, Ellinwood West and Ellinwood South, may join the areas. It was completed for 418 barrels daily from Arbuckle lime at 3335 feet.

Hawkeye Oil Company has defined the north edge of Hittle pool at Moniyhan 1, SEc SW SE 16-31-4e. It was dry at 3373 feet in Arbuckle lime. Jock Garden has a rotary rig at Lewis 1, NE NW NW 22-31-5e, east of Wilmot-Floral gas area, Cowley County.

Magnolia Petroleum Company was drilling Beck 1, CWL NW NW 12-27-13w, ½ mile east of Iuka pool, Pratt County. Wamhoff & Lebsack have staked location for Maduska 1, C SE NE 36-8-20e, 8 miles northeast of the gas discovery in McLouth area of Jefferson County. Lynn et al will attempt to extend Zenith pool 2½ miles to the southwest with DeSelms 1A, SEc 3-25-11w, moving in tools.

Ask 2-acre spacing for Tobarg field, Pecos County

Two-acre spacing for wells in the Tobarg field, Pecos County, was requested by operators at a hearing before the Texas Railroad Commission last week. The field, discovered 11 years ago, has been developed on this basis and there are 200 wells drilled now.

Production is from sands found between 320 and 600 feet. The wells all pump and have an average potential of 13 barrels.

Gas pressure is low, and the oil, of 19- to 22-gravity, is viscous and depends entirely on water drive to move it to the wells.

Great pressure maintenance for Loma Novia field

A permit has been granted to operators in Loma Novia field to operate a pressure maintenance program. The Texas Railroad Commission authorized allocation to other wells of the allowable now assigned to wells which will be used for injection.

Conroe allowable

A minimum allowable of 25 barrels for wells producing from the Cockfield in the Conroe field is provided in an order issued by the Texas Railroad Commission last week. Only 4 or 5 wells are affected.

North Texas

Montague County well flows 240 barrels in 3 hours

Wichita Falls, Texas.—Official gauge given the northwestern Montague County wildcat that precipitated an intensive lease and royalty play during the past 3 weeks fulfilled original forecast of a big well. A new producing depth record for North Texas was also established by this discovery, which was drilled by W. B. Omohundro et al on the Wilmer D. Seay land, NWc S½ N½ H&TC Section 32, Block 4, 3½ miles south of Ringgold, in testing 240 barrels of 47-gravity oil in 3 hours through choke on March 20. Gauge was taken through open 2-inch tubing with rock bit on bottom with the latter serving as equivalent to ⅜-inch bottom hole choke. Production is from conglomerate of sand, lime and granite wash at 5693-5704 feet in Bend lime, topped at 5654 feet. A prolific well was indicated March 4 when formation tester was used at 5676-5704 feet and yielded steady flow of oil with gas volume rated at 5,000,000 feet daily. A short pipe line is to be built to Magnolia Pipe Line Company's trunk line.

Competition for general lease protection and drilling blocks throughout Montague County, northwest quarter of Wise County and a large portion of eastern Clay County caused prices to soar beyond normal levels. Oklahoma operators took an active part, while some majors that had virtually withdrawn from active leasing in North Texas bid for a share of the acreage. Speculators moved in on the popular trends, thereby forcing prices higher than ordinarily would be paid for rank wildcat leases. An east to west trend across Montague County, extending via the recently discovered 5249-foot Bend lime pool at Bonita, Nocona deep area and beyond the new strike commanded the most attention. The Bend zone in the 3 areas affords oil production from a conglomerate section that has not been explored sufficiently to determine if it will surpass the older Bend pay, which is predominately lime in Young, Stephens and adjacent counties, in crude yield per acre.

Numerous Tests in Montague

Numerous wildcats will be drilled in Montague County within the next few months on the strength of the lease play. New projects authorized the past week are by independents, and will be supported by majors through dry hole contributions and acreage sales. A second test for a geophysical high to the southeast of Montague, the county seat, involves the drilling of Oppman & Holtsclaw's Blackburn 1, 1400 feet from west and 467 feet from south lines of Section 1, SA&MG Survey. It is 2 miles southeast of Ramsey Petroleum Corporation's W. H. Magee 1, which is drilling on a 5000-foot contract near the southeast edge of the town, and about same distance northwest of Walter K. Jones et al's Johnson 1, recently abandoned in lower Strawn at 4920 feet. Seitz-Comegys & Seitz, Inc. is starting King 1, NEc W½ SE¼ Section 8, E. B. Wooten Survey, A-840, situated in east portion of county and several miles north of the Benton-Holmes 3-pay pool. Continental Oil Company purchased an acreage spread at $20 per acre contingent upon a 4000-foot test, and a dry hole contribution of $3000 each was pledged by Stanolind Oil & Gas Company and Sinclair Prairie Oil Company.

W. H. Peckham et al has made location for Lawson 1, near center of the west 128 acres of 287-acre tract, Newton Kimbrough Survey, A-405, 6 miles southeast of the Ringgold discovery well. In Cooke County, Ross-Marshall-Tolbert and Rutledge made location for Stark 1, BBB&C Survey, A-155, and is slated to spud late this week on a 5500-foot contract.

Development of the Benton-Holmes pool has been restricted because of the erratic performance of the Strawn pays found near the 3000-3400- and 3800-3900-foot levels. Granite is found at irregular depths to lend further complications. United Producers Company and Continental Oil Company's Langford 2, Section 47, encountered granite at 3789 feet, and halted at 3791 feet. It is a southwest edge test, and is due to be plugged back for completion in the upper pay. Continental Oil Company's Custers 1-A, several locations east of the pool discovery, fills 500 feet with oil while cleaning out cavings that resulted from 180-quart nitro shot at 3735-3831 feet.

The Nocona deep area is to be tested for Ellenberger production on the southwest flank by Sunray Oil Company and Ramsey Petroleum Corporation's Burnett 2, which yielded oil-cut mud and salt water when tester was used at 5188-5325 feet in Bend, topped at 5207 feet. This outpost logged the Bend marker 8 feet lower than the partnership's Burnett 1, which flowed 212 barrels natural in 4 hours through ½-inch choke from Bend at 5224-49 feet, having originally completed in Lower Strawn at 4634-41 feet. Ellenberger limestone is a potential oil source for the area, although it was nonproductive in Rogers & Rogers' Astley-Texaco 1, north offset to the pool discovery.

W. T. Payne et al's Baker 1, SE SE NW Block 42, W. J. Wells Survey, mile west by north of nearest production, is the only major outpost under way. It is considered to be on a favorable trend for the Bend pay. Anderson-Prichard Oil Corporation's Burnett 1, southeast outpost, apparently failed to log adequate saturation to warrant running pipe for a test of the Strawn and Bend, and was drilling at 5415 feet in Ellenberger, topped at 5410 feet, having checked low.

Fourth Producer

Fourth consecutive producer for the Halsell pool, most attractive Strawn horizon strike in Clay County, was assured when Bridwell Oil Company's Halsell 3-A, near SWc Block 12, W. C. Ry. Survey, logged oil saturation at 4736-71 feet. Seven-inch pipe was cemented at 4734 feet to complete. It is a northwest outpost, and is higher on structure than the nearest well. Producing from Lower Strawn series, the Hal-

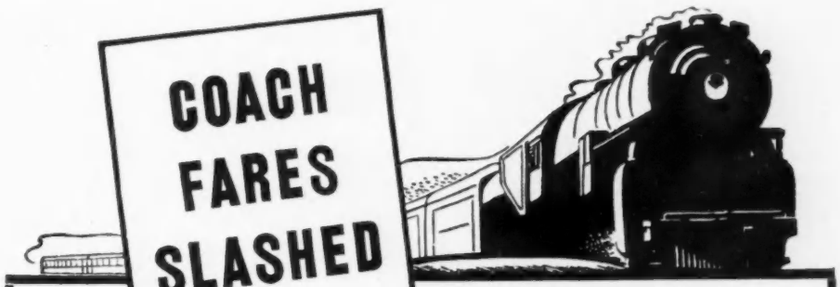
sell pool promises to embrace considerable area, based upon geophysics and so far has been immune from irregular structural conditions. A deep test for the Petrolia shallow field, oldest producing spot in the district, has been contracted by Alexander Goldsmith et al to be located at center of northwest 20 acres of lot 6, block 14, Parker County School Lands, 2 miles south by east of Petrolia. Contract calls for a 4500-foot test, or granite, which has been established several miles to the northeast and near the 4250-foot level.

Clay County's deepest test gave promise of developing into a small producer early last week after being dormant for more than 3 months with the hole partialy junked. Walter Gant et al's Bryant Edwards 1, located 5002 feet from north and 5607 feet from east lines of S. C. Beldon Survey, A-12, 6 miles east of Henrietta, flowed about 30 barrels of 39-gravity oil by heads in 2½ hours when opened. Operations were suspended early last December with 7-inch pipe collapsed near the 5939-foot level after plugging back from 6354 feet to 6069 feet for 2 nitro shots and acidizing with 11,000 gallons in the Ellenberger section, topped at 5991 feet. The well did not indicate commercial production when work was halted, but in view of the tardy showing and absence of water renewed efforts are to be made to condition the hole.

Sharp dip in the Bend lime structure was recorded by Roeser & Pendleton's Parkey 1, C NW SW H&TC Section 11, Block 3, north outpost for the Mankins deep area, Archer County. Seven-inch pipe is cemented at 4888 feet to test lower saturation at 4892-4917 feet, while if this proves dry the casing will be perforated opposite oil saturated zone logged at 4748-92 feet. Top of Bend was tentatively placed at 4750 feet, being about 110 feet lower than a 4684-foot natural flowing well situated 1650 feet to the south. The above company purchased the north 475 acres of Section 11 last December. British-American Oil Producing Company's Wilson 1-C, near C N½ SW NW Section 12 and south of its discovery, was drilling plugs late last week from 7-inch pipe set at 5218 feet for a test of broken saturation at 5233-5425 feet in Ellenberger, topped at 5233 feet. It is the first try for Ordovician production in the area.

Southeastern Archer County

Operations are to be started in about 30 days on a 4300-foot Strawn project for southeastern Archer County recently contracted by Paul Steed, Ernest L. Wilson et al on the Prideaux ranch. Location will be near C NE SW TE&L Company Survey, about 4 miles northwest of 2 Strawn failures drilled in 1938 by Panhandle Refining Company and Rancho Oil Company. Both showed favorable saturation in the 3200-foot zone. It is now believed that intermediate water prevented the making of oil producers, as electrical logs list 2 oil-saturated zones. Later developments in the general area, namely the Shell-Henderson pool and Hull-Silk field, have established proof that water prevails between closely related oil zones. Steed et al have a 2900-acre block. Two Archer County wildcats were nearing decisive depths and a semi-wildcat was about eliminated for production late last week. Continental Oil Company's



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Wilson-McCrory 1-A-20, situated east of the northeast portion of the Hull-Silk field, proved dry in the Bend at 5144-5250 feet and also the 4700-foot Lower Strawn, while test through perforations at 4317-24 feet also yielded salt water. Hedrick Oil Company's Wilson-McCrory 1 was drilling at 4470 feet, and Deep Rock Oil Corporation's McCarty 1, 5 miles northeast of Megargel, was drilling at 4780 feet.

In Wichita County, B. C. E. Development Company and C. M. Johnson's J. N. George 1, near most westerly NWc of O. Farish Survey, 4½ miles southwest of Burkburnett, pumped 110 barrels initial from sand at 1457-69 feet. This semi-wildcat is in an area that received development nearly 20 years ago. The partnership have started a west offset. W. B. Omohundro-E. C. Harlin et al's Kempner 1, wildcat near Lake Wichita, was drilling at 4350 feet on a 5200-foot depth contract.

West Texas

Crockett County test finds Pennsylvanian-Ordovician high

Midland. — The deep-seated Todd Ranch structure, Crockett County, has renewed its bid for a share of the interest being centered upon deep prospects in West Texas through having yielded oil saturation near the Pennsylvanian-Ordovician contact at an unusually high structural position. Continental Oil Company et al's J. S. Todd 2-B, near C NE SW GC&SF Section 29, Block WX, was making a production test late last week through casing at 5634 feet after taking in 3 feet of oil-saturated lime in Basal Pennsylvanian. Top of Crinoidal lime was logged at 5590 feet, with an elevation of 2475 feet, being 328 feet higher on this marker than a 7010-foot failure completed last February about 4500 feet to the southeast. The latter found a 90-foot interval between the Crinoidal and Simpson markers, with the Simpson checking 813 feet higher than a failure 1½ miles east by north, and showed a small volume of oil and gas. The Todd area is the most pronounced structure in the district.

Humble Oil & Refining Company's Young 1, northern Pecos County wildcat, was drilling lime and green shale at 5930 feet in Simpson, topped at 5624 feet, or 3169 feet subsea. No shows have been recorded. This test established a record for the district in logging 439 feet of detrital formation entered at 5185 feet.

M. A. Grisham et al's R. B. Cowden 1, northwestern Ector County wildcat, apparently missed the Holt pay in drilling to 5555 feet, and was reaming 12½-inch hole to bottom late last week to continue to the Ordovician. Ralph Gill et al's Parker 1, west central Ector County wildcat, was drilling at 4995 feet on a 5500-foot depth contract to explore the Holt zone. Barnsdall Oil Company's Blakeney 1, only active deep test in the North Cowden field, was drilling at 4470 feet.

Productive limits of the North Cowden field were expanded ¾ mile southeast when R. R. Rhodes, J. D. Tompkins and Richmond Drilling Company's Johnson-Sinco 1, NWc T&P Section 25, Block 43, flowed by heads from broken pay at 4082-4145 feet. Drilling was halted to erect tankage before continuing to the 4200-foot level for a nitro shot. Top of lime was called at 3940 feet with an elevation of 3035 feet. The partnership authorized a northwest offset. The Texas Company's O. B. Holt 1, SWc T&P Section 12, Block 43, gives promise of extending the main field ¾ mile northwest, having tested a small natural yield in drilling to 4430 feet. It was awaiting shot.

Trucking of crude produced by the Seminole field, Gaines County, is to be terminated this week as result of the completion of Magnolia Pipe Line Company's 8-inch outlet. The oil has been trucked to the Means field, Andrews County, since the completion of the first well in 1936, and more recently wells in the north sector have been served through tank truck deliveries to the Wasson field. A steady gain in field work has been underway this year, and is certain to be stimulated by the arrival of pipe line facilities. Amerada Petroleum Corporation's Averitt 2, situated on the south line of production, earned a potential of 624 barrels natural through ½-inch choke after drilling to 5240 feet.

Termination of pipe line proration in the Wasson field is in sight as result of operators having agreed to the reduction of the output to 35,000 barrels daily. Humble Pipe Line Company began restricting its runs February 15 to 75 percent of the allowable, and Shell Pipe Line Corporation followed suit March 1. The cut was necessary because of allowable exceeding the transportation outlet. Aloco Pipe Line Company also serves the area, but its runs are largely confined to controlled production.

Casinghead gas unavailable to carbon black plants

Texas Attorney General Gerald Mann, in an opinion issued last week at the request of the Texas Railroad Commission, defined casinghead gas and its legal uses. The question was raised because carbon black plants in certain areas were burning gas as casinghead gas, and Mann held that this use was illegal.

The attorney general said casinghead gas was natural gas, and, in those instances where it contained less than 1½ grains of hydrogen sulphide per 100 cubic feet, it must be treated as sweet gas. Under the statute, sweet gas may not be used for carbon black.

Only a few wells are affected by the opinion.

Boost North Thompson field allowable

The Texas Railroad Commission has entered an order, effective March 19, increasing the allowable for the North Thompson field, Fort Bend County, from 1520 to 2000 barrels daily.

Texas commission continues Panhandle spacing hearing

Hearing on the Panhandle spacing question was resumed last week by the Texas Railroad Commission. The hearing, began in Amarillo on March 12, was recessed by Commissioner Jerry Sadler.

Subsequently, the commission entered a rule providing for drilling one well to 10 acres. This rule was contested by Phillips Petroleum Company at the hearing last week, the company advocating drilling one well to 20 acres, 330 feet from lease lines and 660 feet apart.

A proration system based on spacing and bottom-hole pressure is tied to the spacing plan offered by Phillips Petroleum Company. Of total allowable assigned, 75 percent would be distributed on acreage and 25 percent on bottom-hole pressure. Adjustments would be made in the pressure factor from time to time as field conditions change.

The program is a radical departure from the system used in the Panhandle for several years. Allowable is now distributed on per well and potential. Phillips Petroleum Company engineers attacked the potential system and presented testimony to show the method was unfair because potentials now in use do not truly reflect the ability of the wells to produce.

Seminole outlet starts operating this week

Magnolia Pipe Line Company will place in operation early this week an 8-inch pipe line outlet for the Seminole field, only important oil area in West Texas that has been dependent upon tank trucks in reaching markets. The company completed welding March 23 a 26-mile 8-inch line, extending from its Seminole field booster station, near C W½ Section 191, thence south to Andrews County where connection was made with Atlantic Pipe Line Company's Hobbs-Midland 8-inch carrier. Magnolia Pipe Line Company installed a gravity system in the south half of Seminole, while Atlantic Pipe Line Company will place in operation about April 1 a gravity system in the north sector. The two companies will divide the field runs at Midland for final delivery through their respective trunk lines.

Texas permits

The Texas Railroad Commission last week approved permits for drilling 100 wells, 175 less than were allowed the week before.

Two permits were granted in the East Texas field, in Gregg County, while 5 locations were reported from the remaining portion of the East Central Texas area. Southwest Texas led the state with 33 approved locations, including 15 in Duval County. Gulf Coast operators reported 5 permits.

Permits for drilling 13 additional wells were granted in West Central Texas, while 2 locations were listed from West Texas. There were 30 permits approved in North Texas, including 13 in Wichita County, while Panhandle operators were allowed to drill 10 wells.

East Texas

Houston County deep test to try for Glen Rose production

Tyler.—Shell Oil Company's Dorsey 1, Percilla area, Houston County, is relying upon the Upper Glen Rose to make a producer after having eliminated the Lower Trinity section for production by perforating casing at intervals for production tests with negative tests. A depth record for the East Texas Basin was attained in drilling to 10,898 feet in Pettit, topped at 10,658 feet. Prospects for production in the First Glen Rose were encouraged when the test yielded small volume of gas from perforations at 8545-75 feet. Additional perforations were made 10 feet higher to continue swabbing as this horizon yielded oil and gas with drilling fluid when drilling was halted last December for a drill-stem test.

Corrective title work on Harry Moss, Will McGlothlin et al's Camp County drilling block has progressed favorably thereby making it possible for a completion test to be undertaken early next month. Their Joe Venters 1, 2½ miles southeast of Leesburg, logged adequate oil saturation in the Lower Trinity between 7947-8087 feet to be the next deep discovery in the Woodbine belt. Operations were suspended March 8 after cementing 5½-inch pipe on bottom.

Sun Oil Company's Huddle 1, south outpost for the Chapel Hill pool, Eastern Smith County, was due to be shot late last week after bailing dry at 8226 feet with pipe set at 7870 feet. Temperature reading at 7940 feet showed 215° F.

Roger Lacy's Fee 1, third projected test for the deep gas-distillate pool, Gregg County, and immediately east of the East Texas field was drilling at 1550 feet. Preliminary negotiations have been made for a gas franchise at Longview in the event the test is productive.

A secondary fault in south central Kaufman County is to be tested for Woodbine production by P. S. Groginski and E. J. Gannon, Jr.'s Brown 1, Matilda Reynolds Survey, 4 miles northwest of Kemp. A 3000-acre block of leases was procured for the test. W. P. Vaughn et al's Mary Chapman Employees Insurance Company 1, Hopkins County wildcat and the only projected Paluxy test outside the Talco field, was drilling at 3230 feet in Woodbine with an elevation of 414 feet. It is located ¾ mile northwest of Tira.

East Texas field still gets too close drilling permits

Kilgore.—Completion of new wells on densely drilled leases in the East Texas field represents the bulk of the field work. The issuance of permits to drill wells as exceptions to the spacing rules has been liberalized by the commission for several months, forcing neighboring property owners to resume former practice of seeking court injunctions to set aside the permits.

Stanolind Oil & Gas Company won a preliminary injunction in federal district court at San Antonio March 18 to restrain W. D. Ambrose from drilling eight additional wells on the George Jones 12.19-acre lease, G. W. Hooper Survey, Gregg County. Drilling permits were approved February 23 to boost the density of this property to 15 wells.

The application of a proration formula that would curb the output of wells on densely drilled leases in the field to a stripper-well basis has been upheld by the lower court in suits instigated by Humble Oil & Refining Company and Rowan & Nichols Oil Company. The United States Supreme Court is to rule on the case shortly.

Total of 59 wells were completed during the first two months of this year, according to commissioner's records while 49 depleted oil wells were plugged within the period.

Order potential tests for Iatan-East Howard field

Potential retests on all wells in the Iatan-East Howard field, beginning March 18, is provided by an order issued by the Texas Railroad Commission. Commission engineers will make the tests.

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Southwest Texas

New oil fields in prospect in San Patricio and Nueces

Corpus Christi.—New oil fields in both San Patricio and Nueces counties were in the offing as testing was being continued in two Frio sand wildcats. While showings in either of them are insufficient to indicate prolific producers, they may lead to considerable new drilling.

A flowing well is foreseen in Wood & Cosner's Hart 1, 1½ miles northwest of Odem, San Patricio County. Plugged back from 7411 feet, casing was perforated at 6901-04 feet, where the hole gave up a small amount of crude while swabbing. The fluid column continued to rise until the well began to head 5 or 6 barrels per day. New perforations were to be made in the sand section. If these fail to increase the output, the well is to be pumped.

Nueces County's prime interest was being manifest in Swenson 1 of Wellington Oil Company and Seaboard Oil Corporation, Section 131, and two miles south of the southern end of the South Clara Driscoll field. The test found sand and sandy shale with oil showing at 5300-23 feet. The drill-stem tests in the upper portion of the hole failed when the tool slipped. A third, using sidewall packer, was made at 5311-23 feet, in which 60 feet of mud and oil, more than half oil, were recovered. The well showed a steady gas blow during the 20 minutes of the test. It was being drilled deeper.

Henshaw Brothers were placing the second oil sand on production in the Wade City field of Jim Wells County. This pay was proved in several tests previously drilled, but none had been completed at this level. McNeill 1 found the lower sand at 4935-51 feet, but on production test recovered 30 percent oil and 70 percent water. It was plugged back and completion was under way in the zone at 4782-90 feet.

In Calhoun County, R. N. Ranger et al's W. Wilson 1, Garcia Grant, 5 miles northwest of Port Lavaca, topped the Frio at 5249 feet and was drilling below 6000 feet. A sand series between 5092-5149 feet in the Heterostegina-Marginulina group indicated possible oil production.

Kelsey field extended 6000 feet west

Mission.—Kelsey field, Starr County, was extended 6000 feet west when Royal Oil & Gas Company's Juarex 1, Teresa grant, was completed through perforations at 4675-80 feet, to flow 38 barrels daily of high-gravity oil or distillate. Flow was through ⅛-inch choke with pressure 1900 pounds. Hole had been carried to 5638 feet after coring Kelsey sand at 4671-89 feet. A test through perforations at 4510-15 feet showed salt water with a large volume of gas, after which completion was effected as above.

This extension puts several other operators in the play in an area heretofore dominated by Humble Oil & Refining Company.

Sun Oil Company's E. Rodriguez 1, 8 miles southwest of the field, was nearing its 7000-foot objective as the week closed. The well, in the Teresa grant, has cored a series of oil and gas sands in the Frio and Vicksburg zone.

In Hidalgo County, Humble Oil & Refining Company's Ogg 1, Oircuin 64, was abandoned at 8695 feet. The well, 4½ miles southwest of McAllen, was carried into the Vicksburg zone.

Wildcats in Pettus trend promise opening new fields

Beeville.—Several new Pettus trend oil fields were being anticipated late in the week as wildcats were testing this zone. Two operations are in Karnes County, while a third is on the Live Oak-McMullen County line.

A four-year old abandonment is being reworked and may make a commercial producer to open a pool 5 miles southeast of Kenedy and 3½ miles northeast of the Burnell field. It is A. H. Douglas' Radford 1, M. Nichols Survey. The well had been drilled to 3902 feet in the Yegua, then abandoned by George Ray. Recently, the lease and 680 acres in the vicinity were taken over by Douglas and associates. Casing was run to 3682 feet and perforations made at 3502-08 feet with 24 shots. The well was cleaning for about two weeks, making 70 barrels of fluid per day, 20 percent oil and the remainder mud and wash water, through 3/16-inch choke under 480 pounds pressure. Preparations were being made to perforate more of the Pettus sand in an effort to increase the output.

The wildcat found a Yegua sand at 3656-63 feet which carried an oil and gas showing. A second well, offsetting the discovery, is immediately planned in an effort to find production in the lower pay.

Hagan & Stewart Oil Company's S. E. Reagan 2, in the extreme western portion of Live Oak County, 2 miles east of the Calliham field, is in the Calliham or Government Wells sand, at 776-84 feet, where it has bailed some oil. It may make 5 to 10 barrels per day when pumped.

Bee County wildcat testing at 9200 feet

San Antonio.—Drill-stem test was run in Anderson-Prichard Oil Corporation and Mills Bennett Production Company's S. E. Robinson 2, at West Tuleta, Bee County. The hole is bottomed at 9200 feet, having passed through sand and sandy shale and shale from 9110 feet, all carrying streaks of oil odor and stain. The cores ranged from 10 to 60 percent sand.

One drill-stem test had been run from 8923-9200 feet, but the tool slipped. The hole then was reamed to 9110 feet.

On the Yougeen prospect, Bee County, increased weight in the mud was required to keep Bunte Brothers and Jack Frazier's J. T. Earnest 2, Section 17, from blowing out. It tried to go out of control at 9623 feet, but was killed. Later, the hole was drilling below 9835 feet. Union Producing Company's Ray 56, at Pettus, was making hole below 8199 feet.

DeWitt County's lone wildcat in the Wilcox formation, Atlantic Refining Company's Conwell 1, was at the testing stage. After going to 8509 feet, it was tied up with a fishing job. It was plugged back and 5½-inch pipe landed at 8293 feet. Perforations were being made above this level.

Texas hearings

The Texas Railroad Commission has scheduled the following hearings:

South Houston field, Harris County, whether excess production from certain wells owned by Dick Schwab should be cleared, on March 26.

Hilbig field, Bastrop County, special operating rules, March 27.

Coleman County, application of Anzac Oil Corporation for higher allowable on Morris lease, March 27.

Blue Ridge field, Fort Bend County, application of Gabriel J. Lee for higher allowable on Luscher 1, March 28.

Avoca field, Jones County, application of Pantex Production Company for a higher allowable on Sylvester 1, March 28.

Riddle field, Bastrop County, allowable increase, March 29.

Bee Creek field, Caldwell County, allowable increase, March 29.

Order 20-acre spacing for South Thompson field

Standard 20-acre spacing for wells in the South Thompson field, Fort Bend County, is provided in a new Texas Railroad Commission order. Proration is to be on straight acreage with a maximum of 30 acres assigned to one well.

Rules call for 900 feet of surface casing cemented 400 feet above the shoe, and an oil string cemented with a minimum of 300 sacks of cement, or 4000 feet above the shoe.

Ask to water flood in Rogers County, Oklahoma

C. G. Tharp has filed formal petition before the Oklahoma Corporation Commission for permission to water-flood leases in Rogers County. Fifty-three wells located in the area have been averaging from ¼ to ½ barrel per day. They produce from the Bartlesville sand at 450 feet, sand thickness being approximately 25 feet.

Louisiana permits

Forty-eight drilling permits were issued last week by the minerals division, Louisiana Conservation Commission of which 8 were for North Louisiana, divided among the following parishes: Caddo, 3; Catahoula, 1; Madison, 1; Sabine, 2; and Webster, 1.

The 40 in South Louisiana were in the following parishes: Acadia, 2; Ascension, 3; Beauregard 1; Calcasieu, 1; Cameron, 4; East Baton Rouge, 1; Evangeline, 4; Jefferson, 1; Jefferson Davis, 2; La Fourche, 8; Plaquemines, 2; St. Charles, 1; St. Mary, 8; and Vermilion, 2.

Texas Gulf Coast

Wharton County wildcat has 30 feet of Wilcox sand

Houston.—Strake Petroleum Corporation's Poole 1, Lissie area, Wharton County revived Wilcox play interest on the Gulf Coast last week when it logged 30 feet of oil sand below 9745 feet. The wildcat had been plugged back to 9975 feet from 10,116 feet, was perforated with 100 shots at 9939-56 feet, and had 2-inch tubing hung at 9960 feet. It flowed, after being open 2 hours, 15 barrels of fluid an hour through 1/4-inch choke. Fluid was 95 percent salt water, believed channeling up to the producing sand, and 5 percent 27-gravity oil. Operators were preparing to squeeze, and perforate for a second test.

Successful completion of Poole 1 would provide the first Wilcox sand oil field west of Ace, Polk County, 80 miles distant. Several unsuccessful tests have been drilled along the Wilcox trend in the Texas Gulf Coast and Southwest Texas districts. The horizon commanded attention when production was obtained at Eola, Avoyelles Parish, and Ville Platte, Evangeline Parish, in South Louisiana, and Ace and Segno, in Polk County, and at Joe's Lake, Tyler County, Texas. Considerable leasing activity followed along the old Cockfield trend, but later unsuccessful wildcat tests dampened enthusiasm.

Hillary Hebert, Sidney Smith and Titantic Oil Company's Boyt 1, Double Gum Bayou area, indicated a new oil field when it came in making gas and a small amount of oil. The wildcat was drilled to 8865 feet, and at 8845 feet it attempted to blow out. About 4000 sacks of special drilling mud, weighted to 17 pounds, was pumped into the hole. Bottomed at 8865 feet, screen and liner was set at 8775-8865 feet. The wildcat was being washed in, showing 2250 pounds on the casing and 2100 pounds on the tubing. It was flowing through the tubing and a 7/64-inch choke, making gas, 9.8-pound mud, and a little oil. The operators have other sands to test up the hole.

Brazoria Test Fishing

Southwest 1/4-mile of the discovery at Chocolate Bayou, Brazoria County, Glenn H. McCarthy's Andrau 1, H. T. & B. No. 5, was fishing at 11,468 feet. An electrical log had revealed additional new oil sands at 11,375-410 feet and at 11,460-468 feet. This outpost cored a number of new sands. The same operator's Houston Farms Development Company 2, Perry & Austin Survey, was coring in shale below 11,430 feet.

At Anchor field, Brazoria County, five wells were below 10,000 feet. Humble Oil & Refining Company has three, and Glenn H. McCarthy two. Humble Oil & Refining Company's operations are Carr 1, reaming at 10,791 feet; Crocett 1, coring in shale at 10,620 feet, and Galzink et al 1, 4200 feet northeast of the discovery, swabbing washwater after perforating in a new sand at 10,695-700 feet. Glenn H. McCarthy's Neidringhaus 1, two miles southwest of the discovery, was drilling in shale below 10,300 feet, reportedly running high on structure, and Salmon et al 1 was being tested at 9820-24 feet.

Northwest of the discovery at Rosenberg, Ft. Bend County, Humble Oil & Refining Company was preparing to test Miller 1 in a new sand. Casing was perforated at 7850-73 feet with 40 shots, and a 15-minute drill stem test showed 240 feet of gas-cut mud. Operators squeezed perforations, re-perforated at 7725-28 feet with 6 shots, and then squeezed once more.

On the northwest flank of Fannett, Jefferson County, Gulf Oil Corporation was preparing test on Bordages 3, 640 feet southwest of Bordages 2, which was completed in a new oil sand at 8275-87 feet. Bordages 3 was drilled to 8245 feet and 5½-inch casing set after topping gas at 7648 feet and oil sand at 8214-54 feet.

Mackhank Petroleum Company's Wisian 1, E. T. R. R. No. 101, Hilje area, Wharton County, was making 14 barrels of 28.6-gravity oil daily throug 10/64-inch choke with tubing pressure of 1890 pounds and casing pressure of 2050 pounds. The test was drilled to 5232 feet and 5½-inch casing set at 5225 feet. Screen and liner was run to the producing sands.

Deep Rock Oil Corporation announced location for a wildcat 3 miles southwest of Wadsworth, Matagorda County. Tom Petrucha 1 is in a 550-acre tract in the F. W. Dempsey Survey. The company has several thousand acres under lease in this area which was worked by reflection seismograph.

Tide Water Associated Oil Company located a wildcat on the Needville prospect, Ft. Bend County, where a number of un-

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successful wildcats have been drilled. Armstrong 1 is 3713 feet from the southeast line and 5571 feet from the northeast line of J. Scott Survey.

On the northeast side of Old Ocean field, Brazoria County, Sun Oil Company completed W. Campbell 4 after drilling to 10,525 feet. The outpost was perforated ot 10,018-088 feet and at 10,105-140 feet. It came in flowing 414 barrels of pipe-line oil daily through various-size chokes.

In Galveston Bay, Galveston County, Standard Oil Company of Texas' State 1-2346 was abandoned at 7716 feet in shale after failing to pick up producing sands in the lower formations.

Titantic Oil Company is completing Guiterman 2-B at South China, Jefferson County. The well flowed 62 barrels of pipe line oil through a large size choke with a casing pressure of 700 pounds. The operator denies early reports that this well made salt water. The company reports that casing was perforated with 24 shots at 7535 to 7539 feet and when swabbed showed 40 percent oil and 60 percent washwater, no salt water. It was killed and perforated from 7498 to 7508 feet and from 7520 to 7525 feet. It flowed 14 barrels of oil in three hours and then was shut in.

Raise Rincon field allowable

The Texas Railroad Commission has issued an order raising the allowable for wells in the Rincon field, Starr County, producing from 3900 feet, to 125 barrels a day. Deeper producers are allowed 200 barrels a day. There are four wells in the field.

Louisiana Gulf Coast

New oil fields opened in Lafourche and Iberia Parishes

Lake Charles.—The first two oil fields for 1940 were opened on the Louisiana Gulf Coast during last week. At this same time a year ago, two new fields had been opened, but before the year was out there were 14 new producing areas. At the present development rate, there may be more than 14 new fields opened in South Louisiana this year.

Tide Water Associated Oil Company's Delta Farms 1, Delta Farms area, Lafourche Parish, was perforated with 75 shots at 11,290-305 feet and came in flowing 242 barrels of 32-gravity oil in 12 hours through various chokes. Working pressure was 1100 pounds. Operators were preparing to take a potential test. The well was drilled to 11,840 feet and casing set on bottom. A series of tests were made up the hole before it was finally completed in the 11,290-foot horizon.

Plymouth Oil Company opened a new field at Bayou Pegion, Iberia Parish, when McHugh Heirs 1 came in flowing 7½ barrels of 35.6-gravity oil per hour through a 7/64-inch choke. Tubing pressure was around 800 pounds and casing pressure was 525 pounds. The wildcat was drilled to 10,021 feet, and casing set at 8262 feet. It was perforated with 45 shots at 8052-72 feet. Prior to the production test, the operators made a one-hour drill-stem test through a ¼- and ⅜-inch choke. The wildcat started flowing oil in 15 minutes, and flowed at the rate of 15 barrels per hour before pulling the drill stem. No salt water appeared.

Bayou Pegion is a geophysical prospect worked by reflection seismograph by Shell Oil Company, and acreage on which the discovery well was drilled was farmed out. The discovery had a number of other oil sands up the hole which showed oil on drill-stem tests, and they may be tested at a later date.

Atlantic Refining Company's Whitmer 1, Neale area, Beauregard Parish, indicated a new oil field, second for the parish, when Wilcox oil sands were cored at 8366-78 feet. Operators set 5-inch casing below 8600 feet. An electric log at 8366-77 feet showed 70 milivolts and 70 ohms, and at 8412 to 8424 feet 75 milivolts and 5 ohms. Sands showed good saturation.

Good Showing at Cote Blanche

The Texas Company may open a new oil field west of Cote Blanche salt dome in St. Mary Parish if State 1, 16s-7e, is productive. Operators were preparing to perforate casing at 3109-36 feet. The wildcat was drilled to 8685 feet and 9⅝-inch casing was set to bottom. Hole was plugged back, casing perforated with 20 shots at 3154-64 feet, and then was squeezed. Cement was drilled out to 3170 feet for the 3109-foot test, and the sand showed 35 percent porosity and 20 percent saturation. Another good sand was cored at 3141-60 feet.

On West China prospect in Jefferson Davis Parish, Union Sulphur Company's Samson 1, Section 35-7s-4w, was being closely watched. The wildcat was coring in shale at 7664 feet, and it is reported that several tests have been made. The wildcat was being drilled tight. Union Sulphur Company has drilled several dry wildcats in this area, and each had shows of oil.

In Niblett Farms area, Jefferson Davis Parish, Continental Oil Company's Niblett 1, Section 1-11s-5w, set casing at 10,995 feet after attempting to blow out at 11,619 feet. Operators drilled cement plugs and were preparing to core below 11,650 feet. It showed gas and oil, indicating a new oil field for the Louisiana Gulf Coast.

Vincent & Welsh's Nichlas 1, east of Tepetate field, Acadia Parish, logged a sand with an oil show at 3502-16 feet. Sand was confirmed by electric log. Operators were preparing to take side-wall cores after drilling to 9008 feet in shale. Casing may be set for a production test. Electrical log showed 7 ohms at 3503 feet. Ortego sand was topped at 8167 feet, and while drilling at 8950 feet oil showed in the mud ditches.

The Texas Company's Vermilion Parish School Board 1, Erath area, Vermilion Parish, was bottomed at 11,762 feet and side-wall cores were taken. A gas and distillate sand was logged around 10,450 feet.

New Sand at Golden Meadows

A new oil sand was discovered at Golden Meadows field, Lafourche Parish, and it may prove to be the best sand yet found in the field. The Texas Company's LaTerre Company 3 was

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perforated with 47 shots at 10,365-388 feet, and the well came in flowing 1028 barrels of 38.3-gravity pipe-line oil daily through ¼-inch choke with tubing pressure of 2100 pounds. This is the best and deepest well yet completed.

Mikton Oil Company's Martinez 2, 1650 feet southeast of the discovery at Lafourche Crossing, Lafourche Parish, was preparing to test after perforating casing at 10,030-034 feet. Several tests have been made, but they have not looked encouraging.

A new oil sand was discovered on the north flank of West Hackberry field, Cameron Parish, when Stanolind Oil & Gas Company's Cameron Parish 21-A logged oil sands in the Marginulina formation at 9255-97 feet and at 9308-13 feet. Hole is bottomed at 9337 feet, and casing was being set. This is the deepest oil sand yet found around the flanks of this old salt dome, and if productive may start a new drilling campaign for the north side of the field.

Superior Oil Company's second well on the southwest side of Bayou Blue, Iberia Parish, was making a production test of a new sand. Schwing Lumber Company 2, was perforated at 6934-65 feet and at 6920-28 feet, and tubing was being run. Hole was drilled to 7011 feet, in salt, and 6-inch casing was set at 7000 feet. It had other oil sands up the hole.

Test New Horizon

Shell Oil Company's Jeanerette Lumber Company 4, outpost test at West Lake Verrett, St. Martin Parish, was preparing a test of a new horizon. Hole was bottomed at 11,890 feet, and has been plugged back to 11,185 feet with 5-inch liner set at 11,265 feet. Cement plugs are being drilled and the liner probably will be perforated.

On the south flank of Port Barre, The Texas Company was preparing a production test in Botney Bay 27 in a new producing sand. Hole is bottomed at 6523 feet, and operators will perforate casing at 6055-6100 feet, the deepest sand yet tested in the field. Sands at 6320-45 feet showed 60 milivolts and 62 ohms on electric log.

The Texas Company was preparing to test a new sand at Paradis, St. Charles Parish, in L. L. E. Paradis 3, Section 8-14s-20e. After drilling to 11,555 feet, operators plugged back to 10,220 feet and perforated with 40 shots at 10,187-212 feet. A drill-stem test will be made.

West of production at North Crowley field, Acadia Parish, Humble Oil & Refining Company completed Williams 7 after perforating casing at 8797 feet. The well flowed 780 barrels of 35.4-gravity oil daily through ¼-inch choke.

On the southeast side of Ville Platte field, where Danciger Oil & Refining Company completed Vidrine 1 some time ago to extend the field, the well is reported to be making 25 percent salt water, with the percentage understood to be increasing. Operators are drilling a second well in this area.

Glassell & Glassell's Breaux 1, which discovered a new deep producing sand at Anse La Butte, St. Martin Parish, was being killed to rework. The well came in as a good oil producer, but then went to salt water.

North Louisiana

Deep wildcat in LaSalle Parish is plugged back

Shreveport.—H. L. Hunt and Arkansas Fuel Oil Company's deep geophysical wildcat prospect in LaSalle Parish, drilled to 8997 feet, last week was plugged back to 4853 feet, and 5½-inch casing cemented, preparatory to testing a horizon just above that level. The test is Goodpine 1, NW NW 18-10n-3e. Hunt continued testing operations at his Louisiana Central Lumber Company 1, NE NE 13-10n-2e, ½ mile west of the deep test, that had shown about 697,000 cubic feet of gas daily with a flow of salt water and a slight oil showing at the 2900-foot horizon.

Tiki Exploration Company on a block recently assembled for a 5800-foot test to the Glen Rose, south of the shallow Haynesville field, Claiborne Parish, made location for J. L. Moss 1, NE SE 11-22n-8w. In Concordia Parish, Fain Gillock and associates made location for Pittsburgh Plantation 1, NW NW 40-8n-10e. This is south of the Angelina-Caldwell flexure and in an area in which considerable leasing has developed following extensive geophysical exploration by Standard Oil Company of Louisiana, following opening of the Eola field.

On a seven-acre tract offsetting a recent ⅜-mile extension of the oil producing limits of the Sugar Creek field, Claiborne Parish, L. E. Olzey and associates are rigging for Fee 1, SE SE 32-20n-5w. Bobby Manziel is rigging for his second test at City of Shreveport 2, SE NW 35-18n-14w, offsetting his recent completion in the Pettet lime of the first of two wells on the 80-acre municipal golf course.

Talk of an early start of a 10,000-foot test by Arkansas Fuel Oil Company in the Waskom shallow field, Harrison County, Texas, and Caddo Parish, Louisiana, was revived with leasing by this company of a 40-acre tract of M. M. O'Banion fee in the W. H. Adams Survey, which carries a drilling requirement to start operations by March 9, 1941. This company has five gas/distillate wells in that field producing from the Glen Rose and Travis Peak horizons.

Arkansas

Miller County test gets salt water after slight show

El Dorado.—Standard Oil Company of Louisiana's W. P. Sturgis 1, NW SE 1-17-27, Miller County geophysical wildcat prospect, which has shown evidence of likely oil production both in the Blossom (Ozan) and Paluxy horizons, recovered 5 feet of porous oolitic lime with saturation thought to be oil last week in a core from 5219-37 feet in the Glen Rose but later showed salt water when formation tester was run.

The showing was obtained immediately under the anhydrite, whose base was logged at 5129 feet (elevation 346

Confucius Say

It seems a darned shame that a good egg like Confucius should be so blatantly misquoted 2,418 years too late to do anything about it. It was Confucius who pointed out that "The foundation of all good is the virtue of individual men." Not a bad thing to bear in mind when building a business organization. Every member of the PELCO Gang must possess at least the virtue of business integrity. To quote Confucius again (and this was more than 400 years before Christ propounded the Golden Rule) "What ye would not that others do unto you, do ye not unto them." When we stop to think about it, after watching supply companies come and go for more than thirty years, the old boy must have had the makin's of a good business man.

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feet) but formation test at 5210-37 feet, open 30 minutes with ⅜-inch chokes at top and bottom. The test showed 10½ stands of salt water and operators prepared to drill ahead.

Fohs Oil Company abandoned a wildcat in Arkansas County, Miller 1, SEc 33-5s-4w, at 4581 feet. It was drilled as a 5-inch hole.

After three months without drilling activity the Lewisville-Stamps field had 3 new locations made last week. This field, which is lenticular, has had 12 tests drilled, all by East Texas Refining Company and Erwin and Leach.

Standard Oil Company of Louisiana is studying feasibility of repressuring the Buckner field, Columbia and LaFayette counties, which has 19 wells producing from Smackover lime. It is the oldest of the Smackover lime fields in South Arkansas, having been opened in November, 1937. All production there is owned by Standard Oil Company. Reports say that the project contemplates piping gas from the Big Creek area, Columbia County, where this company last December completed a gas/distillate well in the Smackover lime, which has been closed in since completion. Arkansas Oil and Gas Commission March 22 was expected to set a gas allowable for the lone producer there.

Tide Water Associated Oil Company tested J. T. Beene 2, NE NW 15-18-19, Columbia County at Atlanta, at 8247 feet, although the test checked low on top of porosity logged at 8234 feet.

Arkansas permits

El Dorado.—Seven drilling permits were issued last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—Joe K. Mahoney, Emma Riley 3, C SW SE 11-18-19; F. M. Hood, A. C. Warren 1, C NW SE 9-16-22; Standard Oil Company of Louisiana, A. W. Gunnels B-1, C NW NW 20-17-19; LaFayete County—A. H. Boswell and associates, C. H. Ellis 1, located 175 feet south and east NWc SW SE 19-16-23; C. H. Ellis 2, located 175 feet south and west NEc NW NE 19-16-23; Miller County—Hassie Hunt, John Holman 1, located 330 feet north and west SEc SE SW 36-16-27; Union County—Fohs Oil Company, C. T. Grace 1, located 330 feet north and west SEc SW SE 31-17-14.

Mississippi

Tinsley Dome extension well initials 50 barrels per hour

Jackson.—Three new oil wells were completed last week in the Tinsley Dome field, Yazoo County, one of which extended production ½ mile west.

The extension well is Slick-Urschel Oil Company's Slick 1, NE NW 11-10n-3w, which was brought in flowing 50 barrels of oil per hour through 20/64-inch choke with casing pressure 210 pounds and tubing pressure 190 pounds after casing was perforated at 4538-80 feet. This test logged Wilcox at 1187 feet; Selma chalk at 4423 feet, and Woodruff sand from 4547 to 4607 feet. Total depth is 4647 feet; elevation 267 feet. Five new locations were made during the week. Two wells were in course of completion.

Love Petroleum Company made location on an 1100-acre lease in Madison County for Parkinson 1, C NE NW 23-9n-1w, 3 miles northwest of Union Producing Company's Anderson 1, Section 12-8n-1w, which in 1939 drilled 6265 feet. It topped Wilcox at 1100 feet, black shale at 3560 feet and Selma chalk at 4414 feet. In a drill-stem test from 4400-4438 feet it showed 20 feet of 34-gravity live oil. This was several months before discovery of the Tinsley Dome field in August last year.

Union Producing Company's Perry 4, C SW NE 12-10n-3w, in the Tinsley Dome field, in a drill-stem test from 5570-5590 feet in top of Tuscaloosa (Woodbine) logged at 5573 feet (elevation 264 feet), showed 540 feet of heavy oil and 600 feet of oil and salt water in 10 minutes with ⅜-inch chokes at top and bottom. Operators prepared to core ahead from 5618 feet.

Considerable leasing has developed in Simpson County near the town of Braxton where Carter Oil Company, Hunt Oil Company and Sinclair Prairie Oil Company are taking leases. Rentals are being paid on leases in Lamar and Marion counties, west Alabama, assembled by P. J. McAlpine of Amory, Mississippi, and later assigned to H. D. Easton, trustee.

Michigan

Ottawa County confirmation test looks unfavorable

Mt. Pleasant, Mich.—First good wildcat oil well of the year, 75 to 150 barrels natural in Traverse at 1520 feet, completed three weeks ago in Holland Township, Ottawa County, had still to be proven a pool opener last week. Twin Drilling Company's Hyma 1, NE NW NW 34-5n-15w, 660 feet north and 1980 feet west of the discovery, was shut down for orders at 1603 feet after testing for only a bailer of oil and water in 36 hours. The test topped Traverse at 1542 feet, reportedly 12 feet lower than the discovery. The discovery bottomed with pay 4 feet in the lime while Hyma 1 logged its only show about 6 feet in.

Twin Drilling Company's unfavorable showing may cancel three locations which had been staked still farther west and will bring to an end prospects of communitized town-lot development in the city of Holland. Speculators had been buying lot leases as high as $100 each. Three other tests are drilling in the same section as the discovery.

Lang & Lewis, Inc.'s Nevenzel 1, Section 3-3n-14w, ½ mile south of South Overisel pool, was pumping as high as 70 barrels a day before acid at 1477 feet. Originally figured as an extension of South Overisel, last week it was considered a pool opener. The week's developments on the south end of Overisel appeared to cut off a possibility of an extension.

Mesel & Spielbergs' Lipski 1, SW NE SW 14-7n-13w, Tallmadge Township, Ottawa County, had Traverse lime at 1845 feet and bottomed at 1850 feet for test with 300 feet of oil. It loomed as a possible extender of Walker-Tallmadge field ½ mile northwest.

Westbrook Drilling Company's Mulhall 1, SW SE SW 4-1s-15w, Columbia Township, Van Buren County, a semi-wildcat 2 miles west of the developed Columbia-Bloomingdale pool, was shut down for 5-inch casing at 1181 feet with 400 feet of oil in hole. Top was at 1145 feet. The test is ¼ mile northeast of a well drilled by Aldero Oil Company in 1939 at Grand Junction, which showed considerable Traverse saturation but was eventually abandoned as non-commercial.

Eleven wildcats in Southwestern Michigan were abandoned during the week. One of these was C. K. Dean's Hinckley 1, Section 22-22n-8w, Mason County, which was carried into the top of the Sylvania and bottomed at 3360 feet. Two were in Barry County, where a small Traverse producer was completed early in the year.

Six completions were scored in the Basin for the week. One was McClanahan et al's Lundstrum 1, Section 19-15n-2e, Midland County, which topped Dundee at 3669 feet and was junked at 3928 feet without logging saturation.

California

Search for deep pay in West Montebello, Los Angeles

Los Angeles.—Columbia Oil Company is one of several independent units seeking a deeper producing horizon in the West Montebello field in Los Angeles County which, if successful may again speed up drilling operations in this most active of California fields. Currently there are 28 projects under way, of which 16 are drilling and 12 have rigs standing or building. Columbia Oil Company's deep test, Crawford 19, is being taken down in a search for a ninth zone and electric test is being run to present bottom of 8090 feet.

At Ten Section field Shell Oil Company is drilling below 7900 feet in KCL A72-30, Section 30-30-26, an outpost which may add considerably to proven acreage. In development of field completed wells plotted on a map form a "V" with top locations about two miles apart. This well is located about a half mile out and is the first to be drilled between the two tips of the "V".

Universal Consolidated Oil Company's Binkley 2 in the East Coalinga field, a southern outpost, has been bottomed in oil sand at 7768 feet and is standing with 7-inch casing cemented at 7690 feet. Top of the Kreyenhagen was placed at 6412 feet and the green sand at 7600 feet. Amerada Petroleum Corporation's SPL 28-17 in Section 17-19-16, has been bottomed in oil sand at 8168 feet. Water shut-off has been approved and 80 feet of 5-inch liner has been landed and well is being completed. Standard Oil Company is preparing to complete No. 71-19B in Section 19-19-16 from 8255 feet.

In the northwest Athens area, Los Angeles County, El Rey Oil Company's Westmore 1, a wildcat, is coring at 8765 in shale with streaks of sand showing light to fair cut. The sand is believed to be equivalent to the O'Dea sand at Rosecrans to the southeast. Streaks of fairly well saturated oil sand were reported at 8660 feet.

Rocky Mountain States

Activity continues on up-trend as weather moderates

Casper, Wyo.—A half dozen wells started in scattered Rocky Mountain fields continue the trend of revived activity started three weeks ago as weather broke for better operating conditions.

In the recently-discovered Wilson Creek field, Rio Blanco County, northwestern Colorado, The California Company and The Texas Company have resumed drilling Unit 3, NE NE NE 27-3n-94w, which shut down late last fall after setting 13-inch surface string at 765 feet. The test, third to drill in the new field, will go to the Morrison at around 6700 feet.

Minnelusa Oil Corporation started active development of its acreage in the Frannie field, Park County, northern Wyoming. Drilling contractor last week was rigging up rotary for Government 1, SW NW 24-58n-98w. The location is ½ mile beyond production. The company recently acquired 500 acres in the Frannie field.

Yale Petroleum Company's Simonson 1, SW SE NW 34-56n-97w, Garland field, Big Horn County, Wyoming, was near completion, running 2-inch tubing to swab in after setting 7-inch production casing on top of saturated Madison lime at 4020 feet, bottom at 4412 feet.

Continental Oil Company released a new location for the Lance Creek field. Emil Rohlff 3, SE SW NW 32-36n-65w, Niobrara County, Wyoming, is an inside location on the northwest side of the field. The Ohio Oil Company's Agnes Rohlff 6, SE NW NE 32-36n-65w, north extension try, tested water in the Joss sand at 5739 feet, and was plugging back for upstage testing. The company's east extension test, State 8, NWc NW NW 36-36n-65w, got underway last week, and was drilling at 2220 feet.

After acidizing with 2000 gallons at 5290 feet, Continental Oil Company's Schuricht 6-A, SE NE SE 6-35n-65w, swabbed 30 barrels of oil in 24 hours from Leo sand, and was deepening to test the Joss sand, making hole below 5344 feet. Ohio Oil Company's Converse Sheep Company 8, CNW SE SW 32-36n-65w, a top structure well which in 1938 developed 1,500,000 cubic feet of gas daily in the Leo sand at 4994 feet, was coring for the top of the Joss below 5001 feet. A Lance Creek near completion was Minnelusa Oil Corporation's Joss 1-A, NE SE NW 6-35n-65w, drilling at 5300 feet in objective formation, the Leo sand. Ohio Oil Company's Carrie Putnam 14, SW NW SW 33-36n-65w, logged top of the Minnelusa series at 5170 feet, and was drilling at 5251 feet, near completion depth.

General Petroleum Corporation's Government 1-21, CNW NW NW 21-35n-77w, third deep test on Cole Creek structure, Natrona County, central Wyoming, reached critical depth last week, and shut down to set 7-inch production casing on top of saturated Lakota at 8002 feet.

In the LaBarge field, Sublette County, southwestern Wyoming, North LaBarge Oil Company has run 8⅝-inch production casing to 1830 feet in its north extension test, Government 1, SWc NE SE 8-27n-112w. It was deepening below 1850 feet, carrying casing which will be set on top of objective sand at the contact of the Tertiary beds with Cretaceous at around 1900 feet.

Miller Robert Taylors State 1, NWc NE NE 36-25½n-115w, Lincoln County, will resume from 1937 feet within the next few weeks. The test was at critical depth near the top of the Embar formation in the Park City beds of Permian Age, showing some light oil saturation.

Largest gas well completion to date in the Kutz Canyon field, San Juan County, northwestern New Mexico, was made by New Mexico Gas Company in Government 9-B, CNE NW 24-28n-11w, which had 4,500,000 cubic feet initial from 1897 feet in the Pictured Cliff sand. Rig was being moved to drill Government 10-B, CNW SE 24-28n-11w, a first report. The pictured Cliff sand is in the transition beds between Tertiary and Cretaceous. Development of gas in the upper sand at Kutz Canyon points toward a possible deepening to lower beds in the Cretaceous in the Kutz Canyon field for production of oil or gas.

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UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Arkansas County (Wildcat)—		
Fohs Oil Co., Miller 1, 33-5s-4w	*	4581
Columbia County (Magnolia)—		
Standard, Gunnels 1, 20-17-19	750	7589
G. H. Vaughn, Jones D-1, 21-17-20	153	7634

California

FIRST REPORTS

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Dominguez)—		
Union, Callendar 75	572	7396
Los Angeles County (Long Beach)—		
Alamo Oil Co., Rainbow 1	100	5717
Sunset Oil Co., Alford 1	125	2841
Los Angeles County (Montebello West)—		
Franru Oil Co., Condaffer 1	129	7623
Los Angeles County (Rosecrans)—		
Union, Rosecrans 38	279	7884
Los Angeles County (Torrance)—		
C. C. M. O. Co., Torrance 71	255	5028
Vesta Pet. Co., Palos Verdes 1	216	3799
Los Angeles County (Wilmington)—		
Hancock Oil Co., Harbor B-26	350	4073
Royalty Service Corp., Buckley 1	396	3595
Union Pacific, UP (LB) 132	130	3567
Kern County (Canal)—		
Shell, KCL A-85-15	1395	8250
Kern County (Cole's Levee)—		
Ohio, KCL F-7-25-3	524	9823
Kings County (Kettleman North Dome)—		
K. N. D. A., No. 25-16Q	2271	7800
Kern County (Midway-Sunset)—		
National Oil Co., No. 35	25	1588
Kern County (Mount Poso)—		
Vanguard Oil Co., Baker 10	118	1799
Kern County (Wasco)—		
Continental, KCL A-5	878	13,158
Ventura County (Ventura Avenue)—		
Lloyd Corp. No. 4	828	10,135
Tide Water Assoc., Hartman 21	505	9860

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Clark County—		
F. D. Strickler, McFarland 1, sw nw ne sw 19-10n-13w	5	2833
Clay County—		
Olson, Madding 1, c s½ ne nw 12-2n-7e	6	3083
Pure, Kohlmeyer Consol. 1, se c se ne 13-2n-7e	153	3055
Stanford 1, c s½ se se 13-2n-7e	256	3100
Clinton County—		
Lilly et al, Penn 3, nw se se se 12-1n-1w	324	2914
Alton Oil Co., Bude 1, ne nw se se 13-1n-1w	191	2904
Blowers, City Park 7, sw ne nw ne 13-1n-1w	286	2917
Bolen & Byers, Osterich 2, nwc ne se 13-1n-1w	360	2921
Paul Doran, Rothemeyer 2, ne nw se se 13-1n-1w	300	2910
C. E. Lange, Kleeman 2, lot 17, blk 1, 13-1n-1w	596	2914
Whisenant & Trenchard, se sw ne 13-1n-1w	96	2921
Fayette County—		
Texas Co., Griffith 9, se nw se ne 25-6n-2e	182	1582
Ohio, Peters 2, 120 ft n of se ne nw 36-6n-2e	105	1615
Schwarm et al 2 se sw se sw 30-6n-3e	140	1607
Schwarm et al 3, nw ne sw 30-6n-3e	18	1602
Texas, Wright 2, nw ne nw 31-6n-3e	189	1619
Carter, Durbin 18, nw sw sw 4-7n-3e	372	1577
Shell, Jedamski 6, ne se sw 21-7n-3e	108	1583
Carter, Doty 1, ne se nw 2-8n-3e	246	1587
Sinclair-Huffman 1, nw ne ne 2-8n-3e	40	1553
Smith 3, ne nw nw 12-8n-3e	198	1530
Miller 3, sw se ne 16-8n-3e	420	1582
Smith 3, se se se 31-8n-3e	144	1581
Jefferson County—		
Carter, Hall 7, nw nw ne 4-1s-2e	107	1962
Lawrence County—		
Bowman, Shaw-Gray 1 ne se 13-4n-11w	¶24.5	1075
Macon County—		
Rex Dev., Odell 1, ne se nw 20-14n-2e	*	1979
Marion County—		
W. R. Curry, Young Strip 6, nw ne ne se 20-2n-2e	240	3440
Young Strip 8, nw se ne se 20-2n-2e	240	3441
D&H Dr. Co., Young Strip 1, nw ne se se 20-2n-2e	206	3433
Young Strip 3, sw ne se se 20-2n-2e	240	3420
Magnolia, Young 92, sw se ne se 20-2n-2e	108	3451
Young 34, se se sw ne 20-2n-2e	175	3414
Ohio, Young Hrs. 34, nw nw se sw 30-2n-2e	1500	3440
Texas, Young 27, se sw se ne 20-2n-2e	175	3435
Magnolia, Young 81, nw nw 28-2n-2e	4137	3445
Young 84, sw nw sw nw 28-2n-2e	1735	3455
Young 91, nw sw nw nw 28-2n-2e	2877	3427
Texas, Lee 24 nw c sw sw 28-2n-2e	1855	3425
Magnolia, Young 24 sw ne 29-2n-2e	1725	3417
Ohio, Young Hrs. 38 se nw 29-2n-2e	2340	3430
Texas & Rossi, Brooks Community 1, nw ne sw 29-2n-2e	4200	3420
Texas, McCollum 20, sw ne se se 29-2n-2e	3920	3420
McCollum 23, sw se se se 29-2n-2e	1785	3415
Shell, Farthing 8-C, sec sw ne 32-2n-2e	2880	3458
Texas, Friesner 19, nw c ne nw 32-2n-2e	3000	3360
Friesner 20, se nw 32-2n-2e	7917	3415
Maxwell 7, sw c ne ne 32-2n-2e	2350	3450
McConnoughay 6, n½ se se 32-2n-2e	238	2085
Miller 10, c s½ ne se 32-2n-2e	196	2072
Reynolds 4, se ne se ne 32-2n-2e	5733	3442
Farthing 5, se se 33-2n-2e	182	1912
Jones & Adams, Adams 1 ne c se ne 7-3n-1e	*	1501
Richland County—		
Pure, Pflaum 4, nw ne ne 5-3n-9e	142	2593
Cook 2, c nw nw sw 24-4n-9e	11	2620
Murray 6, sw ne ne nw 6-4n-10e	143	2878
Wabash County—		
Superior, Hocking 1, sw nw se 20-2n-13w	64	2524
Tidewater, Spencer 3, ne nw nw 20-2s-13w	144	2479
Wayne County—		
Frost, Crews 1, se nw sw 27-1n-7e	*	3162
Robinson, Caldwell 3, se se nw 34-2n-8e	90	3415
White County—		
Superior, Ford 16, ne ne sw 4-5s-14w	120	2945
Eason Oil et al, Rebstock 2, nw ne se 14-6s-9e	60	2278
Eason Oil, Storms 2, sw sw sw 14-6s-9e	176	2260
Eason & Angle, Storms 6, se nw se 14-6s-9e	124	2263
Storms 7, sw se se 14-6s-9e	92	2270
Storms Hrs. 8, se se se 14-6s-9e	168	2257
Exchange & Ohio, Rudolph 3, nw ne ne 14-6s-9e	200	2284
Rudolph 4, se ne ne 14-6s-9e	120	2279
Exchange, Storms 3, sw nw ne 14-6s-9e	200	2271
Storms 4, ne nw ne 14-6s-9e	200	2278
Storms 6, nw sw ne 14-6s-9e	200	2270
Watkins et al, Storms 1, nw ne ne se 22-6s-9e	¶30	2249

*Failures; †Junked; ¶Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended March 23, 1940

	WELLS COMPLETED							*PERMITS FOR NEW WELLS				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	3	2	.....	1	903	44	56	7	13	29	47	223
California	20	18	.....	2	9,096	293	242	24	67	251	237	1,136
Colorado	.....	.....	.....	.....	.....	2	6	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois*	71	66	2	3	57,051	808	912	58	209	895	.....	893
Indiana	7	2	4	1	7	86	27	.....	.....	.....	.....	.....
Kansas	35	24	1	9	43,150	356	284	40	122	392	288	1,583
Kentucky	2	.....	.....	2	.....	52	149	.....	.....	.....	.....	.....
Louisiana	21	14	.....	7	2,541	338	224	48	126	336	258	1,449
Michigan	39	18	1	20	2,167	315	270	19	73	299	238	1,419
Mississippi	4	3	.....	1	2,160	36	1	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Montana	.....	.....	.....	.....	.....	28	24	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	14	10	.....	4	2,026	179	151	10	48	185	.....	293
New York	22†	22†	.....	.....	97	262†	115†	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	12	9	2	1	78	213	193	.....	.....	.....	.....	.....
Oklahoma	44	23	2	19	2,606	477	440	61	139	459	439	2,059
Pennsylvania	46†	39	3	4	50	609†	276†	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	225	161	7	57	98,086	2,447	2,351	100	719	2,655	2,444	10,269
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Virginia	8	1	5	2	1	148	123	.....	.....	84	58	718
Wyoming	5	4	.....	1	9,451	36	44	.....	.....	.....	.....	.....
Total this week	578	416	27	134	229,470	6,784	5,899	367	1,562	5,585	4,009	.....
Total last week	518	370	29	119	221,528	6,206	5,480	538	1,145	5,178	3,709	19,470
Total this year	6,784	4,933	412	1,438	2,604,268	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells.

United States Well Completions—*Continued*

Indiana

Dubois County—
Frank Damron, Humbert 4, n½ sw sw 25-1s-4w ..... • 690

Posey County—
J. E. Crosbie, Inc., Keck Hrs. 5, sw c ne 34-3s-14w 10 2205

Putnam County—
C. E. Jefferson, Carter Est. 1, sw c ne 15-16n-3e 6 894

Spencer County—
Gulf Pet. Corp., Scanahorn 1, nw sw 29-7s-6w ..... ¶3.1 928

Sullivan County—
Hoosier Public Utility Co., Schoettmer 205, c sw ne 14-9n-9e ..... ¶.18 936
Vabeele 208, c ne se 11-9n-9e ... ¶.10 893
Vabeele 207, c se se 11-9n-9e .... ¶.23 916

Kansas

Barber County—
Pryor et al, Vanderplas 1, se nwc se 18-31-13w ..... • 4620

Barton County—
Gulf, Joseph 1, nwc sw 29-16-11w .1633 3315
Bodine, Hertes 1, c n½ nw se 8-20-11w 164 3321
Derby, State 3, se sec 10-20-11w .. 823 3288

Butler County—
Adair et al, Sawyer 1, sec sw 10-28-7e 50 2765
Thomas 1, swc se 10-28-7e 42 2775
Morris, Wright 1, sw nwc sw 30-28-8e ..... • 2865

Ellis County—
Darby, Jorgenson 7, c n½ se sw 7-11-17w 3000 3354
Cities Service, Collahan 9, sw se nw 24-11-17w 3000 3440
Phillips, Sites 4, c n½ sw sw 12-11-18w 3000 3352
Skelly, Kempe 3, c s½ se nw 12-11-18w 3000 3359

Cowley County—
Texas, Hittle 11, sw ne se 21-31-4e. 3752 3335
Hittle 12, ne nw se 21-31-4e 3744 3286

Ellsworth County—
Hollow, Janzen 1, c s½ sw se 18-17-9w 3000 3259

Gove County—
Cities Service, Victory 1, csl s w nw nw 36-13-30w ..... • 5169

Johnson County—
Lambertson et al, Green 1, sw ne sw 25-14-22e ..... • 1698

McPherson County—
Shell, Griffith "B" 3, nw nwc ne 14-19-2w (OTD 3371 feet) 63 3008
Sunray, Briggs 4, c e½ nw nw 29-20-5w 3000 3373

Rice County—
Mid-Plains, Newkirk 1, c s½ sw se 14-18-7w ..... • 3487
Mission, Habiger 9, c n½ nw nw 5-18-10w 3000 3220
Pryor et al, Southern 1, c n½ ne ne 14-19-10w ..... • 3325
Skelly, McGuire 3, c s½ se ne 34-19-10w 1240 3309
Hipple, Brown 1, nec 19-21-6w 150 3418

Rooks County—
Iowa-Kansas Oil Co., Beardmore 1, c e½ se ne 10-9-16w 756 3172

Russell County—
Cities Service, Sutton 1, sec 7-13-14w ..... • 3118
Skelly, Opdycke 11, cwl sw se sw 29-14-13w 502 2866
Phil-Han et al, Mills 1, se sw sw 12-14-15w (OTD 3165 feet) ..... • 3297
Phillips, Boxberger 1, nw sw nw 24-14-15w (OTD 3237 feet) 170 3135

Stafford County—
Stanolind, Hitz 3, c e½ ne nw 2-22-12w 1610 3587
Landon, Coen 1, nwc ne 15-23-14w • 4003
Deep Rock, Turner 2, c s½ se sw 2-24-11w 2451 3765
Transwestern, Banker "B" 1, c e½ se se 10-24-11w 2000 3831
Continental, Mather 2, cel se sw nw 12-25-13w 3000 4144

Stevens County—
Republic Natural, Parker 1, c ne 31-34-36w ..... ¶13.9 2820

Kentucky

Daviess County—
J. C. Miller et al Burns Prudential 2 ..... • 1865

Ohio County—
Henry Scholl, Muffett 4 ..... • 530

North Louisiana

Caddo Parish (Pine Island)—
Magnolia, Dillon Hrs. 31, 23-21n-15w 50 1655
J. R. Murray, Cheshire 1, 32-21n-15w 50 1592
H. J. Strief, Noel 3, 12-20n-16w .. 325 1541
W. & W. Oil Co., Arkansas Fuel 4, 12-20n-16w 225 1546

De Soto Parish (Naborton)—
C. H. Tuttle Oil Co., Wemple A-2, 14-12n-11w 10 2698

Sabine Parish (Zwolle)—
Major Oil Co., Sabine B-2, 5-7n-13w 28 2475

South Louisiana

Anse La Butte—
Iberia Pet. Co., Moresie 1 ..... 576 2479

Chacahoula—
Sun, Cypress 1 ..... • 7426

Chalkley—
Union Sulphur, Sweet Lake Land Co 1. ..... • 9250

Chrenton—
Pan American, Ecuer A-5 ..... 120 1150
Ecuer A-7 ..... 100 1158

Golden Meadows—
Marr et al, A. Terrebonne 4 ..... 290 5175
S. Rhoades, Falgout Holding 4 ..... 216 5167
Fred Shields, Latonte 1 ..... • 250

Jennings—
Brown & Sisson, Houssiere Latreille 3 ..... 40 1938
Glassell & Glassell, Trushell 8 ..... • 10,735

New Iberia—
Texas Co., Duhe 15 ..... 227 4282

Port Barre—
Gulf, Wilson-Broach 17 ..... • 5509

Ville Platte—
Continental, Pitre 5 ..... 259 9040

Plaquemines Parish—
Gulf, Buras Levee District 1-D, West Bay area, 6-23s-31e ..... • 10,103

St. Martin Parish—
Wm. Helis, Rycade Oil Co. 1, Section 28, 33-9s-7e ..... • 9411

Michigan

Allegan County—
Red-Man Oil Co., Brower 1, sw se sw 34-4n-14w ..... • 1532
Fletcher & Lemans, Schaap 1, ne sw sw 34-4n-14w ..... • 1489
Jacob Bolema, Van Popper 1, nw ne ne 34-4n-14w 96 1571
Sprenger Bros., Van Buren 1, sw se sw 35-4n-14w ..... • 1618
Lang & Lewis, Nevenzel 1, ce nw sw 3-3n-14w 70 1477
Gould & Cross, Rigterink 2, se se sw 34-4n-14w 400 1488
Wiser Oil Co., Jurries 3, nw sw se 34-4n-14w 170 1436
Chief O&G Co., Commissaris 1, se ne ne 9-4n-13w ..... • 1650
Socony-Vacuum, Ledger 2, se sw nw 14-4n-13w 97 1581
Lang & Lewis, Flesser 1, sw ne sw 15-4n-13w 100 1605
Chief O&G Co.'s Land Bank 1, ne ne nw 36-3n-11w ..... • 1844

Barry County—
V. R. Kirkham, Vosburgh 1, nw nw sw 20-1n-8w ..... • 1995
Sun, Osborn 1, nw nw nw 11-3n-9w • 2183

Berrien County—
E. K. Emlong, Mead 1, c n½ s½ s½ 15-6s-19w ..... • 410

Clare County—
Pure, Austin A2, c s se se 27-19n-6w 100 3910
Wicklund Dev. Co., Fell 2, c n½ nw se 33-19n-6w ..... • 3915

Isabella County—
R. W. Reading, Burwash 1, nw ne sw 16-16n-3w 20 3707
McClanahan & Whites, Leosh 1, se ne nw 17-16n-3w 250 3728

Kalamazoo County—
Bliss Keeler, Hosner 1, ne sw 13-1s-11w ..... • 1636

Kent County—
American Dr. Co., Shellard 1, c s nw se 4-7n-12w ..... • 442
C. A. Welsh, Thurkettle 2, se se sw 29-7n-12w 60 1875
Ide & Glavins, Gravel Co. 5, sw se sw 33-7n-12w 85 1764
Certain-Teed Prod., Fee 12, sw nw nw 3-6n-12w 200 1775
James McGerry, Gavin 2, sw nw nw 5-6n-12w 93 1884
C. A. Welsh, Peck 1, ne sw se 12-6n-12w ..... • 1905
Erbin Oil Co., Plat 1, nw ne ne 23-6n-12w ..... • 1920

Lake County—
Tamblyn Dev., Kellog 1, nw nw nw 14-20-11w ..... • lcn.

Mason County—
C. K. Dean, Hinckley 1, c n ne ne 22-17n-15w ..... • 3360

Midland County—
McClanahan and Associates, Lundstrom 1, sw nw 19-15n-2e ..... • 3928

Missaukee County—
Wicklund Dev. Co., Malone 1, sw ne 22-22n-8w ..... • lcn.

Monroe County—
Skinner & Shiffmans, Rowe 1, ne se se 30-6s-6e 50 2109

Montcalm County—
E. C. Dailey, Keller 1, nw se ne 18-12n-5w ..... ¶6.5 1324

Ottawa County—
Red-Man Oil Co., Edison 1, se nw nw 28-6n-13w ..... • 1760
Lenoran Pet. Co., Smalligan 1, ne ne ne 29-5n-13w ..... • 1729
Twin Dr. Co., Community 1, ne se ne 23-7n-13w 65 1884
H. C. William, Bryan 1, sw sw nw 25-7n-13w 85 1878
Fisher-McCall, Goodale 3, sw se se 25-7n-13w 200 1857

Van Buren County—
E. W. Collins, Morehead 1, nw nw se 11-2s-15w ..... • 1126
Gratiot Oil Co., Nuttling 1, sw ne sw 21-2s-16w 26 991
H. B. Cannon, Billerbeck 1, se se se 4-1s-15w ..... • 1155
W. A. Milliken, Kotelensky 1, sw se sw 20-1s-15w ..... • 1116

Mississippi

Yazoo County (Tinsley Dome)—
Hassie Hunt, Johnson 1, 14-10n-3w 480 4890
Johnson 2, 14-10n-3w 480 4860
Jones & O'Brien, Stevens C-1, 11-10n-3w ..... † 5012
Slick-Urschel, Slick 1, 11-10n-3w..1200 4647

New Mexico

Chaves County (Wildcat)—
Helm-Martin et al, Stephens 1, c nw ne 22-15s-29e ..... • 1835

Colfax County (Wildcat)—
York-Denton et al, Tex-Mex 1, nwc 2-26n-24e ..... • 1515

Eddy County (Wildcats)—
C. C. Dodson Dr. Co., McElrath 1, sw sw sw 3-16s-29e ..... • 2750
Sam Weiner et al, Hess 1, se se se 9-16s-29e ..... • 1925

Eddy County
Helen M. Bowers et al, State 1, se nw sw 1-18s-29e 960 2709
Carper-Miles-Tallmadge, State 2-A, swc ne 32-17s-30e 250 2882
Franklin Pet. Corp., McIntyre 2, nw se se 20-17s-30e ..... ¶1.2 1819
Premier Pet. Corp., Beeson 4-F, se ne sw 31-17s-30e 269 2831

Lea County (Cooper)—
Shell Oil Co., Whitten 3, ne nw ne 33-23s-36e 180 3636

Lea County (Langlie)—
Gulf Oil Corp., State-Arnott-Ramsey 2-E, c sw se 16-25s-37e ..... ¶15. 3153
Skelly Oil Co., Sherrill 3, ne nw ne 6-25s-37e 69 3490

Lea County (Maljamar)—
Barney Cockburn et al, Miller 5-A, c se sw 23-17s-32e 120 4065

Lea County (Penrose)—
Gulf, State-Cole 3-A, c ne se 16-22s-37e 82 3715
Two States O. Co., State-Gulf 6-B, c nw ne 16-22s-37e 96 3698

New York

Allegany County—
Liberty Share Corp, Lee farm, Bolivar 5 1382
Utter Oil Co., Richardson farm, Alma 6 1422
Moore & Repp, Hatch farm, Wirt .. 8 1320
McDonell Oil Co., McDonell farm, Bolivar 6 1325
Richardson Pet. Corp., Holtum farm, Scio 6 1064
Helen Randall, Reid farm, Alma .. 12 1416
Bradley Prod. Corp., Monitor farm, Alma 5 1370
L. H. Richardson et al, Watson farm, Alma 5 1383
L. E. Norton, Coats farm, Scio 5 1185
O. D. Underwood et al, McDivitt farm, Bolivar 6 1357
L. H. Thornton et al, Brown farm, Alma 7 1345
Bliven Hill Oil Co., Norton-McEwen farm, Scio 5 918
A. H. Ashworth, Pratt farm, Bolivar 6 1426
Cam Oil Co., Colegrove farm, Genesee 4 1320
Dick & Goodrich, Dick-Goodrich farm, Wirt 7 1345

[*Continued on next page*]

United States Well Completions—*Continued*

NEW YORK—*(Continued)*

Company, Well and Location	Init Prod. Bbls.	Depth
B. & S. Oil Co., Jordan farm, Wirt.	3	1368
Water (Intake) Wells—		
Forest Oil Co., Ackerman farm, Bolivar	...	1424
Porge Oil Co., Anderson farm, Alma	...	1276
Vossler Bros. et al, Quick farm, Alma	...	1530
Quaker Oil Co., Brown farm, Alma.	...	1260
Willets & Paul Corp., Lot 22, Genesee	...	1528
Bradley Prod. Corp., Coats farm, Wirt	...	1292

Oklahoma

Company, Well and Location	Init Prod. Bbls.	Depth
Caddo County—		
Pace, Wray 1, nw sw ne 6-5n-9w..	*	3521
Carter County—		
Daube, Love-Johnson 1, sw nw nw 33-1s-3w	214	3971
Shell, Ward 46, sw nw ne nw 6-4s-3w	*	1270
Tubbi 45, nw se sw nw24-4s-3w	10	1634
Comanche County—		
Wichita Oils, Palmer 15, sw sw ne nw 28-2n-10w	5	465
Creek County—		
Sinclair-Prairie, Watson 1, ne nec 15-14n-8e (OTD 3258 feet)	5	3288
Springer, Havercamp 1, sw se ne 29-14n-10e	*	1798
Johnson O. & Ref. Co. Hayden 2, ne nw nw 6-18n-10e	*	2249
Grady County—		
Alma, Rogers 1, cnl nw se 36-5n-8w	*	3515
Hughes County—		
Walker et al, Rogers 1, nec 24-7n-9e	*	635
Crescent, Meadors 1, c se se 5-8n-10e (OTD 3094 feet)	*	3896
Jackson County—		
Pendleton et al, Stokes 8, ne nw sw 11-1n-20w	*	1368
Stokes 9, sw nw sw 11-1n-20w..	*	1406
Badger, Dosher 1-A, nwc ne 14-1n-20w	*	1626
Harper-Knabenberger, Harper 1, sw ne nw 5-1s-19w	*	2700
Lincoln County—		
Harper et al, Mann 1, nw nwc se 23-14n-5e	*	4105
Wilcox, School Land 11, sw se sw 16-14n-6e	20	3143
Stanolind, Crawford 1, nec se 35-15n-2e (OTD 5244 feet)	¶2.5	4600
Okfuskee County—		
Summit, Steil 3, nw ne sw 18-10n-11e	200	2263
Jordan, Robinson 1-A, nw nwc se 21-12n-11e	10	2580
Okmulgee County—		
Wilson, Flint 3-A, sw ne nw ne 27-14n-14e	*	1752
Steffey, Anderson 3, nw nw ne ne 34-14n-14e	*	1185
Pontotoc County—		
Magnolia, Norris 8, ne sw nw se 21-2n-7e (otd 3940 feet)	*	1425
Metropolitan Life 15, nw ne ne 27-2n-7e (OTD 3755 feet)	*	1600
Superior, Summers 2, nwc 36-5n-4e (OTD 2480 feet)	240	2602
Summers 5, swc nw 36-5n-4e....	*	2610
Delaney, Shipley 3, se nw sw 21-5n-8e	¶5	2155
Pottawatomie County—		
Culver et al, Waite "A" 1, ne se nw 9-5n-5e	225	2644
Waite 2, sw nw ne 9-5n-5e	80	2525
Viersen, Ramsey 1, sw nw sw 26-6n-4e	40	3030
I. T. I. O. Co., Akerman 1, nw se sw 4-6n-5e	361	4095
Alma, Johnson 5, ne sw sw 19-6n-5e	207	2840
Johnson 7, sw se sw 19-6n-5e....	*	3577
Taber et al, Miller 3, se nw se 29-7n-5e (OTD 4123 feet)	42	4179
Campbell, Bruno 1, nw se se 31-7n-5e (OTD 4096 feet)	96	4147
J. F. Smith, Tarter 3, nw sw sw 32-7n-5e (OTD 4055 feet)	55	4116
Eason et al, Crane 1, nwc 31-10n-5e	120	4275
Gaskill, Sauter 2, nw se se 31-11n-4e	362	4463
Seminole County—		
Culver et al, Swan 1, sec sw 3-5n-5e	100	2736
Alma, Cully 2, nwc 34-7n-5e	125	4294
Traugh, Scroggins 1, nw ne sw 34-7n-6e	*	3263
Ligon et al, Patterson 1, sw nw se 24-8n-7e	50	3319
Magnolia, Dixon-Ligon 3, sw se sw 24-8n-7e	*	3310
McIntyre, Johnson 5, ne sw ne 10-10n-8e	36	1646
Stephens County—		
Burkheart et al, Spears "C" 2, sw nw sw nw 15-1s-5w	3	514

Ohio

Company, Well and Location	Init. Prod. Bbls.	Depth
Knox County—		
R. C. A., Fry 1	¶.15	2661
Medina County—		
E. R. Edson & Son, Brent 2	45	481
Thornton Prod. Corp., Sanford & Watson F-3	5	404
Sanford & Watson F-6	5	359
Sanford & Watson F-8	5	372
Sanford & Watson F-11	5	363
Sanford & Watson F-12	5	370
Sanford & Watson O-4	I	490
Sanford & Watson O-5	I	405
Morgan County—		
Gas Prod. Co. of Ohio, A. Printz 1	*	3900
Noble County—		
Kennonsburg O. & G. Co. Ward 2..	8	720
Washington County—		
Wm. Schneider et al, Sacketts Run 1	¶.03	1430

"I" indicates water input well.

Pennsylvania

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District—		
Corwin & Gallagher, Corwin	2	....
Melvin Towne Oil Co., fee	2	....
Pine Run Oil Co., Bing 130-1-2-3-4-6	4	....
N. V. V. Franchot, Tr. Brandel Hrs	8	....
C. W. Foster, et al, Warters	4	....
J. P. Kervin, Baker	1	....
Messer Oil Corp., Redfield	2	....
Forest Oil Corp.	1	....
Forest Petroleum Corp., 2 wells...	2	....
Niagara Oil Corp., 4 wells	4	....
Bradford Transit Co., 12 wells	12	....
Water (Intake) Wells—		
N. V. V. Franchot, Campbell	...	....
Forest Oil Corp, 2 wells	...	....
Forest Petroleum Corp, 3 wells	...	....
Niagara Oil Corp., 3 wells	...	....
Middle District—		
M. M. Master, Rickenbrode	1	....
W. D. & F. T. Barry, Given & Barry	2	....
Water (Intake) Wells—		
Cities Service Oil Co., Hamilton	...	....
Butler Armstrong District—		
N. A. Marshall, et al, Rittman	5	....
Allegheny County—		
Equitable Gas Co., Hickman 1	*	2955
Armstrong County—		
T. W. Phillips O. & G. Co., Boyer 2	¶.08	3605
J. Wray et al, White 1	*	1555
Fayette County—		
Wahler Power O. & G. Co., Gray 1	¶.20	2462
Washington County—		
Foley & Williams, Clark 3	¶.18	1378
Henry Williams et al, Buchanan 7	*	1440
Potter County—		
G. L. Cabot, Inc., Stone 1	*	5116

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Anchor—		
Glenn H. McCarthy, Galaznik 1	496	10,495
Big Creek—		
Clarence Gain, Wheat Estate 2	10	1049
Caplen—		
Sun, State 1-26	¶1	7660
Zinn-Forman 3	188	7850
Danbury—		
Humble, Bassett Blakely 1	*	7600
Hardin—		
Atlantic, Humphreys A-2	88	7575
Hastings—		
Humble, Masterson 2	326	6089
Hull—		
Republic, Fee 167	75	2175
Humble—		
Derring et al, Burt 2	160	1755
Manvel—		
Texas Co., Belcher A-23	533	5670
Old Ocean—		
Harrison & Abercrombie, Larson & Ediing 3	496	10,536
Sun, Campbell 4	414	10,525
Pickett Ridge—		
F. B. Burton, Anderson 1	*	4823
Port Neches—		
Texas, Stark 10	266	5974
South China—		
Titanic, Broussard 2	209	7882
Thompson—		
Gulf, Wolters B-6	161	5410
Humble, Davis 29-y	489	4345
Quintana, Wolters B-6	112	5445
West Columbia—		
Texas, Hogg 93	119	3115
Withers—		
Showers & Moncrief, Halamieck 1..	*	6075
R. Y. Smith, Melcher 1	*	5560
Texas, Pierce Estate 49-B	52	5551
Pierce Estate C-69	99	5396
Galveston County—		
Standard of Texas, State 1-234, Galveston Bay	*	7716
Jefferson County—		
Fidelity, Craigen 1, se of Hampshire, T. & N. O. 146	*	9412

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
Barnes & R. P. Traugh, Carson 2-B	1904	4347
Chapman-McFarlin, Wilson 4-D	1064	4330
Wilson 1-F, lot 7 (pb to 3821 ft)	1920	4427
Cities Service, Wilson 27-C	744	4363
Ed Cox & Jake Hamon, Anderson 3 (pb to 4150 ft)	276	4438
Little 2	1200	4375
Deep O. Dev. Co.-R. G. Dr. Co., Little 5	3240	4317
Helmerich-Payne & Blackwell O&G Co., Wilson 8	1272	3852
Wilson 9	1560	3872
Wilson 11	1440	4373
Bert Ligon et al, Anderson 8	†	4417
White 1-D, sec 40	252	4415
Archer County—		
Cato Oil Co., Anderson 5	456	1070
N. D. Goldsmith et al, Neale 1	*	1105
Bert Ligon et al, White 2-D	23	1657
J. C. Sharp et al, Miller 1	4	757
Archer County (Wildcats)—		
C. B. Christie-Phillips Pet. Co., Taylor 1	*	5281
Snoddy Bros. & Perry, Webb 1	*	915
Young & Woody Dr. Co., Abercrombie 1	*	1412
Baylor County (Seymour)—		
British-American O. P. Co., Fowlkes 3	520	2528
Clay County (Burns-Browning)—		
L. T. Burns et al, Browning 3	*	4517
Clay County—		
L. T. Burns et al, Hamilton 1, blk 83	10	1151
Hamilton 3, blk 83	120	1121
E. N. Costley et al, McInnes 4, blk 58	124	1122
Harvey Dr. Co., Taylor 4, blk 33..	*	1135
Taylor 5, blk 33	*	1074
Riner-Fain-Stilley, Patrick 1, blk 82	*	1130
Staley Oil Co., Barry 1, sec 2642..	*	850
Clay County (Wildcats)—		
Gorman & Norwood, Cheeves-Turner Oil Co. 1, blk 54	*	1197
Taylor 1, blk 38	*	1315
Gorman Dr. Co., Taylor 1, blk 55..	*	1204
W. B. Hamilton et al, McGregor 1, blk 52	*	1350
Cooke County (Walnut Bend)—		
Ed Cox & Hamon, Neu-Texaco 12-B	408	4908
Magnolia, Ramsey 2	250	4897
Sinclair Prairie, McGeorge 7	768	4920
Sun, Snuggs 2	292	4940
Cooke County—		
Bridwell O. Co., Fisher 3	*	1185
Jack County (Wildcat)—		
W. L. Forbes et al, Davis 1	*	2518
Montague County (Nocona)—		
Stanolind, McCool 1	2760	5255
Montague County (Wildcat)—		
W. K. Jones Dr. Co. et al, Johnson 1	*	4920
Throckmorton County—		
Falls Prod. Co., Graham 14, sec 992	68	1844
Walter Newstadt et al, Brown 1, sec 930	*	702
Wichita County (K-M-A)—		
Fain-McGaha Oil Corp., Griffin 14-B	1080	3795
Hammon-Hanlon-Buchanan, Hammon 10	1368	4062
Hanlon & Buchanan, Fassett-Tuttle 8-E	375	4031
Ray Oil Co., Griffin 1	*	3853
Southport Pet. Co., Wichita River 13-A	504	4064
Sunray Oil Co., Denny 5	640	3890
Wichita County—		
King Oil Co., Waggoner Est. 9-R..	15	1595
F. E. Van Wormer et al, Cochran 2, sec 9	5	856
Wilbarger County (Consolidated)—		
Consolidated et al, Ancell 1-C	720	3987
Wilbarger County—		
Lawson & Simpson, Waggoner Est. 3-W, sec 50	270	1285
Young County—		
Danciger O&R, Shanafelt 2, sec 11	*	4607

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Gulf, Cooper 27	155	3091
Shell, Cooper 7-A	323	3197
Gray County—		
Humble, Haggard 11	238	3246
King Oil Co., Durkin-Rice 5	444	3285
Texas, Saunders 32	527	2860
Warner Oil Co., Taylor 2	*	3158
Hutchinson County—		
Clay Bros. Dr. Co., Herring-Texaco 3-B	1020	3250
J. M. Huber Pet. Corp., Herring 2.	¶11.5	2785
Herring-Magnolia 4	¶6.1	2878
Mid-States Oil Corp., Whittenburg 31-A	482	2742
Texas Co., Pond 21	762	3071
Texas Plains O. Co., Watkins 11..	94	3028
Lipscomb County (Wildcat)—		
Phil O'Neil et al, Koch 1	*	1100

United States Well Completions—*Continued*

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Jackson County—		
Magnolia, West 50-A (West Ranch)	1125	5595
West 52-A (West Ranch)	900	5589
West 53-A (West Ranch)	1100	5130
West 5-A (West Ranch)	1100	5760
West 57-A (West Ranch)	1200	5110
Stanolind, L. Ranch Co. 3 (West Ranch)	1250	5747
Superior, Dummond Est. 3 (West Ranch)	1250	5623
Jim Wells County—		
Bridwell Oil Co., Hoffman 6-A (Ben Bolt)	550	5256
Rodney Delange, McNeil 3 (Wade City)	900	5337
H. H. Howell et al, Whatley 2 (Ben Bolt)	850	5670
Meyer & Simons, Reynolds & Richardson 5-B (Magnolia City)	56	5697
Pure, J. H. Reynolds et al 1 (Magnolia City)	¶2	6289
Nueces County—		
Bryant & Saner, Rogers 2 (Clara Driscoll)	68	6616
O. W. Killam et al, H. Holmes 4 (Clara Driscoll)	600	5682
Sinclair Prairie, State of Texas 8 (707) (E. White Point)	500	5630
Refugio County—		
Coronado Corp., Buchering 1 (La Rosa)	*	6357
San Patricio County—		
Republic Natural Gas Co., Rachal 25 (E. White Point)	500	5682
Victoria County—		
W. V. Bowles, Robertson 2 (E. Telferner)	*	6616

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County—		
Argo Oil Corp., Fee-Rodden 8-A (Hoffman)	72	2713
Bridwell Oil Co., Ancira 14 (N. Sweden)	*	5475
Cox & Hamon & Gorman-Yoakam, Hoffman 4 (107) (Tarancahuas)	130	2049
Hoffman 5 (107) (Tarancahuas)	*	2100
Cuellar Bros. 17 (Hoffman)	146	2867
Lanning, Noake & Evans, Peters 1 (East Peters)	*	2563
Magnolia, D.C.R.C. 22 (189)	50	1483
A. Weil 2 (1)	¶5	2794
G. S. Mortimer, M. P. Springer & Westland Oil Co., W. R. Peters 4-B (East Peters)	72	2486
Pan-American Prod. Corp., J. F. Welder Heirs 12-A (Seven Sisters)	45	2650
Standard of Texas, A. B. Rodriguez 1 (WC), Redondo gr	16	6838
Sun, Anita de Valaeria 1 (Muralla)	88	4708
Hidalgo County—		
Humble, Ogg 1 (WC), por No. 64	*	8695
Jim Hogg County—		
Great States Oil Corp., F. G. Martinez (Trevino) 7-B (Colorado)	125	3009
Humble, Atwood et al, 12 (Colorado)	450	3063
McMullen County—		
Marion Prod. Co., J. A. Jungman 1 (S. Calliham)	*	1347
Tybro Roy. Corp., First Nat'l Bank 1 (WC), sec 40	*	1225
Martin 1 (WC), sur 18	*	1219
Starr County—		
W. R. Davis & Co., Slick B-12 (Rincon)	750	4306
Slick B-14 (Rincon)	550	4310
Humble, McGill Bros. 61 (Kelsey)	450	4744
Royal O&G Co., E. Juarez 1 (WC), Santa Teresa gr	50	5638
Webb County—		
F. M. Boso, Mable Adami 1 (Adami)	50	1000
Harvey & Henderson, R. Benavides 4 (Volpe)	66	2456
O. W. Killam, Puig Bros. 1 (WC), Edgington sur	*	2563
Magnolia, Volpe-Benavides 25 (Volpe)	¶2	2482
Starrett & Leighty, Adami 1 (WC), sur 336	*	1328
Zapata County—		
Interstate Minerals, Lopez 34 (Mirando Valley)	*	1752
Lopez 37 (Mirando Valley)	80	1850
Lopez 38 (Mirando Valley)	40	1795

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Guadalupe County—		
Diamond Half Oil Corp., Strey 1 (WC), J. de los Cortinas gr	*	795
Gulf, Dix 9 (Darst Creek)	52	2511
F. W. Nute, Howell (Christi) 1 (WC), Jacobs C. Darst sur	*	2894
E. A. Weyel et al, Schraffel 4 (Elm Creek)	*	772

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Cook Dr. Co. (was B. Cockburn), A. Green 6	1200	3759
Gulf, Trimble 1 (50-ac), input well	*	4191
Transo Oil Co., Keeling 9 (22¾-ac)	2500	3692
Kilgore Area—		
Overton Ref. Co., I&GN Co. 3-B (7.88-ac)	864	3576
Longview Area—		
Tom Potter et al, Smith 1	1500	3617
W. C. Turnbow, Tr., McGrede-Burnett 2 (6-ac)	3000	3614
Anderson County (Cayuga)—		
J. R. Bunn Dr. Co. et al, Royall-Cone-Tidal 2 (49.35-ac)	10	4024
Anderson County (Long Lake)—		
H. L. Hunt Oil Co., Reagan 1 (24.61-ac)	83	5388
Hill County (Wildcat)—		
Carter-Bowland et al, Atchison 1	*	85
Trinity County (Wildcat)—		
W. R. Davis & Co., Texas Long Leaf Lumber Co. 1	*	2500

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Emma)—		
Skelly, University 1-F	1120	4313
Crane County (Gulf-McElroy)—		
Gulf, Crier-McElroy 7-A	513	2908
Crane County (Jordan)—		
Kewanee Oil Co., University 6-B	†	2275
Crane County (Sand Hills)—		
Humble-Sun et al, Tubb 2-C	2231	4406
Crockett County (World-Powell)—		
F. B. Black et al, Powell-Gulf 1-C	826	2633
Ector County (Foster)—		
Lee Drl. Co., Johnson 10	1504	4320
Stanolind, E. F. Cowden 30-B	279	4180
Witcher 39	1224	4170
T. P. Coal & Oil Co., Johnson 1	430	4280
Ector County (Goldsmith)—		
American-Maracaibo Co., Scharbauer 3-B	865	4170
Gulf, Goldsmith 256	648	4236
Goldsmith 258	1068	4180
Goldsmith 259	1692	4227
Phillips-Pure, Cowden 75	168	4184
Ector County (Jordan)—		
Shell, University 7-E	1268	3650
Ector County (North Cowden-Holt)—		
Stanolind, W. F. Cowden 1	97	5237
Ector County (North Cowden)—		
Shell, E. N. Woods 2	1016	4475
Stanolind, Midland Farms 1	239	4480
Tide Water Associated, T. P. Land Trust 1	535	4250
Gaines County (Seminole)—		
Amerada, Averitt 2	624	5240
Atlantic, Riley 2-C	658	5300
Magnolia-Atlantic, H. & J. 2-265	802	5301
Gaines County (Wasson)—		
Continental, Wasson 3-50	1159	5017
Hockley County (Slaughter)—		
Awoeb Oil Co.-Bond & Harrison, Davis 2	1156	4995
Hockley County (Wildcat)—		
Denver P. & R. Co.-Helmerich-Payne, Whiteface 1	*	4796
Howard County—		
Sinclair Prairie, Texas L&M Co. 7	183	2848
Irion County (Wildcat)—		
W. S. Kelly et al, I. G. Yates 1	*	350
Pecos County (Pecos Valley)—		
Superior Oil Corp., Iowa Realty 9	158	1639
Upton County (McCamey)—		
Cardinal Oil Co., Wooley-Shell 21	158	2140
Parker Drl. Co., King Ranch-Texaco 3	183	2146
A. J. Rife et al, Baker-Republic 9	250	2243
Sergent-Rutter-Wilbanks, Elder 5	291	2252
Ward County—		
Gulf, Hutchings 137	2419	2727
G. W. O'Brien 121	110	2650
G. W. O'Brien 123	228	2787
G. W. O'Brien 124	240	2767
Magnolia, Geo. Sealy 3-43	¶5.76	2938
Mid-Continent Pet. Corp., Sealy-Magnolia 5	1186	2995
Winkler County (Emperor)—		
Stanolind, E. W. Cowden 5	¶3.73	3050
Yoakum County (Wasson)—		
Aloco Oil Co., Moore-Texaco 2	173	5242
G. R. White-Texaco 5	728	5220
Anderson-Prichard Oil Corp., Willard-Spearman 3-805	1598	5150
Argo Oil Corp., Comer 6-A-740	1200	5213
Basin States Oil Co., Jordan-Honolulu 2	210	5204
Continental, Kendrick 2-867	624	5124
Don Danvers et al, W. Anderson 1	408	5238
Honolulu Oil Corp., Hovencamp 2-890	1677	5105
Mabee O&G Co., Willard 24	1363	5185
Magnolia, H. Mahoney 10	940	5195
Shell, Baumgart 7-B	1267	5193
Baumgart 6-D	1203	5110
E. C. Brand 2-B	1031	5076
R. M. Kendrick 1-868	1108	5128

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Danube Oil Corp., Keller 1	15	1140
G. Reynolds et al, Howell 2	18	1209
Callahan County—		
R. Hickman et al, Hickman 1, sec 120	*	1308
E. Johnson et al, Higgins 5	*	477
Valley Osage Oil Co.-H. T. B. Co., Slaughter 6	¶1	389
R. Wilbanks et al, fee 1, sec 4	9	323
Coleman County—		
States Oil Corp., Sewell 1	47	3622
Comanche County—		
L. H. Choate et al, Ayers 3	20	582
Shallow Oil Co., Jones 2	3	421
Jones 3	*	425
Jones County—		
Danciger O&R, Inc., Roberts 8	274	1919
Humble, I. N. Irwin 7	*	3040
Jones County (Wildcat)—		
Sam Roberts-Owens-Snebold, Jefferies 1-a	*	3665
Palo Pinto County—		
S. Jones et al, Gauldin 1	*	1546
Shackelford County—		
Roark et al, Hickman 1, sec 16	29	663
Roeser-Pendleton, Inc., Cook 5-B-113	101	1584
Cook 6-B-113	35	1563
Shackelford County (Wildcat)—		
Jones Stasney et al, Davis 1, sec 50	*	1814
Stephens County—		
Stedman Pet. Co., Powers 1	100	3627

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
Owens-Libby-Owens, Allen & Prior 24	¶.05	2371
Cabel County—		
Meabon et al, Bledsoe 1	¶.20	3470
Kanawha County—		
Columbian Carbon Co., Jones 1	¶3.43	5381
Lincoln County—		
Wysong-Jaynes, Adkins 1	¶.13	3845
Ritchie County—		
Hope Const. & Ref. Co., Hammett 3725	1	1985
Howard Hall, Calhoun 1	*	2065
Roane County—		
Reedy O. & G. Co., Lewellen 1	*	1739
Wayne County—		
United Fuel G. Co., Stepp 4865	3.71	2350

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Carbon County (Albert Dome)—		
Albert Dev. Syn., Boeke 1, sw nw 18-25n-79w	*	954
Fremont County (Plunkett)—		
Lincoln O&G Co., Tribal 8, e ne sw 23-1s-1e	18	470
Niobrara County (Lance Creek)—		
Argo Oil Corp., Elliott 12-a, c se se nw 5-35n-65w	3360	5409
Minnelusa Oil Corp., Ford 1, csw nw ne 33-36n-65w	2712	5431
H & M 4, cne ne se 7-35n-65w	3360	5542

*Failures; †Junked; ¶Million cu. ft. gas.

Ask 40-acre spacing for Hunton lime, Milroy field

Forty-acre spacing has been requested for the Hunton lime zone of Milroy pool, Stephens County, Oklahoma. Companies requesting the rule were The Carter Oil Company, Magnolia Petroleum Company, Skelly Oil Company, Phillips Petroleum Company, Healdton Petroleum Company, Stanolind Oil & Gas Company, Heenan-Coe Company and Sinclair Prairie Oil Company. The lime zone is believed to embrace approximately 2640 acres.

Order East Texas well-status reports

Operators in the East Texas field have been instructed to file well-status reports at the Texas Railroad Commission office in Kilgore by March 30. The reports cover operations between March 15 and March 30, and provide space for data on oil and water production as well as other information.

WILDCAT REPORT
New Starts and Completions

ARKANSAS
FIRST REPORTS

LaFayette County—Atlantic, Bodcaw 1, ne sw 29-17-23, moving in materials. (Smackover lime test).

Miller County—Hassie Hunt, Holman 1, se se sw 36-16-27, moving in materials.

COMPLETIONS

Arkansas County—Fohs Oil Co., Miller 1, 33-5s-4w, abnd 4581 ft.

CALIFORNIA
Fresno County—J. E. Logan, Y. & L. 1, 330' N and 330' W 26-16-14. Cantua Creek area, 1 cu.

Kern County—Santa Mora Oil Co., NW NW 10-28-20, South Belridge area foundation.

Kern County—Premier Extension Oil Co., No. 1, SE 31-25-27, Jasmine area, location.

Tulare County—R. W. B. Gas & Oil Co., R. W. B. 1, NE SE 11-24-23, rig Alpaugh area.

COMPLETIONS

Santa Barbara County—United Western Oil Co., Bradley 1 15-7-30, abnd 4403 ft.

COLORADO
FIRST REPORT

Huerfano County—Harold F. Collins et al's Bartlett 1, se nw 3-28s-68w, Badito-Alamo structure, spd 468 ft.

KANSAS
FIRST REPORTS

Rooks County—Lario O&G Co.'s Morrison 1, c s½ sw ne 32-10n-17w, rur.

Stafford County—Lynn et al's De Selms 1-A, sec 3-25-11w, pits.

Trego County—J. E. Trigg et al's Rasek 1, c ne ne 13-21-23w, mim.

NORTH LOUISIANA
FIRST REPORTS

Claiborne Parish — Tike Exploration Co., Moss 1, ne se 11-22n-8w, moving in materials. (5800 ft test to Glen Rose).

Concordia Parish—Fain Gillock et al, Pittsburgh Plantation 1, nw nw 40-8n-10e, materials.

SOUTH LOUISIANA
FIRST REPORT

Plaquemines Parish—Gulf's Buras Levee District E-1, West Bay area, 660 ft s along the e line of Section 1-23s-30e fr nec of Sec. and 150 ft w at right angles in Section 1-23s-30e, lcn.

COMPLETIONS

Plaquemines Parish—Gulf's Buras Levee District 1-D, West Bay area, Section 6-23s-31e, abnd 10,103 ft.

St. Martin Parish—Wm. Helis' Rycade Oil Co. 1, Section 28 dome, Section 33-9s-7e, abnd 9411 ft.

MICHIGAN
FIRST REPORTS

Allegan County—Union Oil Co.'s Frary 1, se ne ne 21-4n-12w, dr.

Isabella County—Chapman Oil Co.'s Dreier 1, ne ne 21-13n-5w, dr.

Missaukee County—C. W. Teater's Community 1, c se 31-23n-5w, dr.

Muskegon County — Wyman & Creech's Griswold 1, ne ne ne 28-11n-15w, lcn.

Ottawa County—Homer Fulton's Wittinger 1, se se se 28-6n-14w, lcn.

COMPLETIONS

Allegan County—Lang & Lewis, Inc.'s Nevenzel 1, c e nw sw 3-3n-14w, Heath Township, Traverse 1470 ft, td 1477 ft, pumping 70 bbls day natural, ½ mile extension or pool opener. Chief Oil & Gas Co.'s Federal Land Bank 1, ne ne nw 36-3n-11w, Wayland Township, Traverse 1735 ft, td 1844 ft, abnd.

Barry County—V. R. Kirkham's Vosburgh 1, nw nw sw 20-1n-8w, Traverse 1951 ft, td 1995 ft, abnd. Sun's Osborn 1, nw nw nw 11-3n-9w, Traverse 1856, Dundee 2120, Monroe 2160 ft, td 2183 ft, abnd.

Berrien County—E. K. Emlong's Mead 1, c n½ s½ 15-6s-9w, abnd 410 ft.

Kalamazoo County—Bliss Keeler's Hosner 1, ne sw 13-1s-11w, Traverse 1605 ft, td 1636 ft, abnd.

Mason County—C. K. Dean's Hinckley 1, ne ne 22-22n-8w, Sylvania 3328 ft, td 3360 ft, abnd.

Midland County—McClanahan Oil Co. and Associated Petroleum Co.'s Lundstrom 1, sw nw 19-15n-2e, Dundee 3669 ft, td 3928 ft, abnd.

Ottawa County—Red-Man Oil Co.'s Edison 1, se nw nw 28-6n-13w, Traverse 1700 ft, td 1760 ft, abnd. Lenoran Pet. Co.'s Smalligan 1, ne ne ne 29-5n-13w, Traverse 1721 ft, td 1729 ft, abnd.

Van Buren County—E. W. Collin's Morehead 1, nw nw se 11-2s-15w, Traverse 1103 ft, td 1126 ft, abnd. H. B. Cannon's Billerbeck 1, se se se 4-1s-15w, Traverse 1145 ft, td 1155 ft, abnd. W. A. Milliken's Kotelensky 1, sw se sw 20-1s-15w, Traverse 1115 ft, td 1116 ft, abnd.

MISSISSIPPI
FIRST REPORT

Madison County—Love Pet. Co., Parkinson 1, c ne nw 23-9n-1w, materials.

NEW MEXICO
COMPLETIONS

Colfax County—York-Denton et al's Tex-Mex 1, 400 ft out of swc 2-26n-24e, elev 6224 ft, passed up carbon dioxide gas, abnd 1515 ft.

Chaves County—Helm-Martin et al's Stephens 1, c nw ne 22-15s-29e, elev 3881 ft, abnd in hfw 1835 ft.

Eddy County—C. C. Dodson Dr. Co.'s McElrath 1, sw sw sw 3-16s-29e, elev 3713 ft. abnd 2750 ft. Sam Weiner et al's Fred Hess 1, se se se 9-16s-29e, elev 3705 ft, abnd 1925 ft.

OKLAHOMA
FIRST REPORTS

Kingfisher County—Anderson & Prichard et al's Geis 1, c ne sw 15-18n-9w, otd 8507 ft, to dd.

Okmulgee County—Young's Miller 1, nw sw ne 6-15n-14e, lcn.

COMPLETIONS

Lincoln County—Youngblood et al's Wright 1, nec se 32-16n-6e, Skellyville area, top Mayes lime 3955 ft, shot 40 qts 3922-42 ft, 35 bbls.

McIntosh County—Acme Drlg. Co.'s Reynolds 1, nec sw 22-11n-14e, 1½ mi e Kusa gas pool, td 1412 ft, abnd.

Pottawatomie County—Alma Oil Co.'s Lyday 1, se ne sw 30-6n-5e, 3 mi s Gray pool, top Earlsboro 2740 ft, top 2nd Wilcox 3935 ft, td 3979 ft, abnd.

TEXAS PANHANDLE
COMPLETION

Lipscomb County—Phil O'Neil et al's Jacob Koch 1, c nw sw H&TC sec 539, blk 43, abnd 1100 ft.

WEST TEXAS
FIRST REPORT

Reeves County—Roy Johnson et al's Perkins 1, sw sw sw PSL sec 18, block C-7, mim for Delaware test.

COMPLETION

Irion County—W. S. Kelly, Jr., and Len W. Lagle's Yates 1, 330 ft out of sec sec 730, Conrad Boppe sur, elev 2200 ft, abnd 350 ft.

WEST CENTRAL TEXAS
FIRST REPORT

Jones County—Thos. D. Humphrey et al's Triplett 1, 3200 ft s and 960 ft w of nwc of M. S. Brown sur, but in sec 201, J. J. Hughes sur, dr 665 ft. King Oil Co. et al's Olson 1, nw nw ne BBB&C Ry. sec 189, lcn.

COMPLETIONS

Jones County — Sam B. Roberts, Owens-Snebold et al's Jeffreys 1-a, 330 ft from n and 366 ft from w lines se ne T&P sec 7, blk 15, elev 1722 ft, top Palo Pinto lime 3467 ft, abnd 3665 ft.

Shackelford County—Jones-Stasney et al's Davis 1, 467 ft out of sec sw¼ T&P sec 50, blk 13, abnd 1814 ft.

EAST TEXAS
FIRST REPORTS

Henderson County—Dilworth Hager & Jones Dr. Co.'s Faulk-Coleman 2, 2000 ft from n and center of e and w lines of R. S. Rayburn sur, 3½ miles nw La Rue, cem surface pipe.

Hopkins County—W. P. Vaughn et al's Employers Reliance Insurance Co. 1, 300 ft out of nwc of 160-acre tract, Frances Hopkins sur, ¾-mi nw Tira, cem surface pipe.

Kaufman County—P. S. Groginski and E. J. Gannon, Jr.'s Brown 1, 330 ft from e and 2210 ft from n lines of 902-acre tract and

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Mathilda Reynolds sur, 4 mi nw Kemp, rur.

Van Zandt County—Frank Shackelford et al's Oliver 1, near center west 50 acres of 198-acre tr, e side of John Wright sur, 3 mi nw Grand Saline, mim.

COMPLETIONS

Hill County—Carter-Bowland et al's Atchison 1, 480 ft out of sec of tract and E. Carroll sur, 5 mi w Hillsboro, abnd 85 ft.

Trinity County—W. R. Davis & Co.'s Texas Long Leaf Lumber Co. 1, 1800 ft from n and 467 ft from e lines of A. Henry sur, 9 mi n Trinity, abnd 2500 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—L. T. Burns et al's Muncharath 1, 750 ft out of swc e½ sec 22, blk 4, Clark-Plumb sur, 3 mi w Windthorst, sd 1137 ft.

Baylor County—Hall-Jordan Oil Co.'s Green 1, 990 ft from s and 638 ft from e lines H&TC sec 8, A-1376, or J. E. Hix sur, 3 mi e Rendham, rig.

Clay County—Ted A. Norwood et al's Parker 1, 150 ft n and 150 ft e of nec blk 133, but in blk 128, Byers Bros. subdiv, dr 1470 ft.

Foard County—Domain Oil Co.'s Worsham & Wishon 1, 2842 ft out of nwc of (north) Marshall University sur, Pat. No. 385, Cert. 22/186, 10 mi w and 2 mi s Crowell, rig for 4000-ft test.

Montague County—Oppman & Holtzclaw's Blackburn 1, 1400 ft from w and 467 ft from s lines sec 1, SA&MG Ry. sur A-703, 3 mi se Montague, mim for 4900-ft test. Seitz-Comegys & Seitz, Inc.'s King Est. 1, 1903 ft from w and 330 ft from n lines se¼ sec 8, E. B. Wooten sur A-840, mim for 4000-ft test.

Wichita County—B. C. E. Development Co.-C. M. Johnson's George 1, 450 ft from n and 150 ft from w lines of 111-ac tr, Oscar Farrish sur A-383, testing o.s. 1451-62 ft, td 1467 ft.

COMPLETIONS

Archer County—C. B. Christie-Phillips Pet. Co.'s Taylor 1, 660 ft from s and 330 ft from e lines of 260-acre tr, Harvey Cox sur A-67, Strawn lime 4240 ft, top Bend lime 5215 ft, abnd 5281 ft. Snoddy & Perry's Webb Bros. 1, 1100 ft from n and 1225 ft from w lines sec 1897, TE&L Co. sur, abnd 915 ft. Young & Woody Dr. Co.'s Abercrombie 1, 884 ft from n and 1517 ft from w lines Wm. Cound sur No. 798, trace oil 1390-97 ft, abnd 1412 ft.

Clay County—Gorman & Ted Norwood's Cheeves-Turner Oil Co. 1, 780 ft from n and 978 ft from e lines blk 54, Bacon subdiv, trace oil and water 1068-74 ft, abnd 1197 ft; Taylor 1, 1148 ft from nw and 1192 ft from ne lines blk 38, Bacon subdiv, trace oil in broken sand 1119-25 ft, abnd 1315 ft. Gorman Dr. Co.'s Taylor 1, 650 ft from s and 264 ft from e lines blk 55, Bacon subdiv, abnd 1204 ft. W. B. Hamilton et al's W. M. McGregor 1, 150 ft from nw corner blk 52, Specht-McCutcheon sur, trace oil 1226-31 ft, abnd 1350 ft.

Jack County—W. L. Forbes et al's N. W. Davis 1, 2795 ft w and 2065 ft n of m/s/se cor BBB&C Ry. sur A-94, abnd 2518 ft.

Montague County—Walter K. Jones Dr. Co. et al's Johnson 1, 330 ft from se and 440 ft from ne lines sw¼ E. T. Ry. sec 5, A-230, 4 mi se Montague, Palo Pinto lime (dry) 2743-2820 ft, abnd 4920 ft.

SOUTH TEXAS

FIRST REPORTS

Duval County — G. W. Basom's Charles Adami Hrs. 1, 467 ft n and w lines of lease in lot 5, sec 47; or 1458 ft s line and 2251 ft e line, A and B sur No. 47, 3 mi se Adami field, 20 mi nw Freer, dr 650 ft. Magnolia's Well et al 1 (561), 2683 ft nw line and 4671 ft ne line, BS&R sur No. 561, 1 mi nw of sw edge of field, mir. Sun's de Valaeria 2, sec 300 Julia Rogers sur, 2080 ft sw No. 1, skidding on.

Guadalupe County—Fred W. Nute's Howell (Christi) 2, fr intersection of hwy with w line of tr 1817 ft s along w line, thence 500 ft e at r/a to location, 231 ac tr, Jacob C. Darst sur, 350 ft se No. 1, 2½ mi sw Nash Creek, loc.

Jim Wells County—Frank J. Gravis, Inc.'s Forry 1, 466 ft s and w lines, 50-ac lease, LaVaca "Jose Maria Garcia" gr, Ab-166, 1½ mi n Alice field, 3 mi sw Alice, sp. W. B. Osborne's Almond 1, 467 ft n and w lines, Hiram Riggs sur No. 14, Ab-405, 7 mi n and e Alice field.

McMullen County—A. van Desar's Braur 1, 500 ft sw line and 2150 ft nw line, R. H. Brown sur No. 54, 8½ mi w Whitsett, loc.

Nueces County—Richardson Pet. Co.'s Studer 1, 473.5 ft n and s lines, 491 ft e and w lines of combined lots 4, 5 and 6, blk 17-B, George H. Paul's subd, Driscoll Ranch, 1 mi n Robstown, dk.

San Patricio County—Argo Oil Corp.'s East 1, begin s corner, 100.12 ac tr, go 550 ft n, 32 degrees, 10 minutes w, thence 525 ft n, 60 ft e to location in John P. Borden sur No. A-338, 3½ mi n Mathis, ru. Midwestern Pet. Corp.'s Timon 1, 466 ft se and sw lines, 100 ac lease, blk 29, San Patricio Town Tract subd, about 7 mi se Mathis, loc. Tidewater and Sinclair's Ragsdale Bros. 1, 3796 ft n line and 467 ft e fr sw cor of 1094 acre tract, Williams Bell sur, 4000 ft nw of field, dr plugs at 1275 ft.

Starr County—Herbert Aid's Garza (Ohio) 1, 125 ft e and w lines and 500 ft n line in 15.963 ac tr, share 1, por 72, Camargo Jurisdiction, loc.

Victoria County—Colton & Colton's Mahon 1, 466 ft ne and nw lines of tr in Irrigated Company sur No. 27, 2½ mi nw Telferner, sp.

Webb County—M. L. Massingill's Kirkpatrick 1, 2950 ft e line of Sur. and 467 ft nw of nw corner of Superior's lse, in 400-ac tr, sec 32, blk 1, CCSP & RGNG sur, loc. Howard Nessly's Kirkpatric 1, 330 ft s and e lines of n½ of nw¼ sur 59, 6 mi nw Lopez field, 25 mi n Bruni, loc. Texas Co.'s Kirkpatrick 1, 330 ft n and w lines of se¼, sur 31, CCSD & RGNG RR Co. blk 1, 3 mi nw Lopez field, loc.

COMPLETIONS

Duval County—Standard Oil Co. of Texas' Rodriguez 1, 2218 ft s line, 1490 ft w line, 369 ac tr San Pedro de Charco Redondo gr, ¾ mi n and slightly w of discovery, comp flowed 16 bpd distillate, ¼ ch, 750 tp, sealed cp, perf 5647-60, 5569-81, 5524-60, 5475-60, with 194 shots, dist sd 5475-97 and 5517-5637 ft, sd with oil odor 6790-6838, 16-in csg and 7-in csg 5691 ft, td 6838 ft.

Guadalupe County — Diamond Half Oil Corp.'s Strey 1, 150 ft w along s line fr nw cor of Fred Neumann lse and 150 ft n at r/a to loc in 100-ac tr J. de los Cortinas gr, 2½ mi ne of Elm Creek, abnd 795 ft. Fred W. Nute's Howell (Christi) 1, 1500 ft n line and 250 ft w line, 231 ac tr Jacobs C. Darst sur, 2½ mi sw Nash Creek field, abnd 2894 ft.

Hidalgo County—Humble O&R Co.'s T. A. Ogg Jr., 1, 660 ft s and e lines, lot 2, blk 5 Rio Bravo Plantation subd, por 64, 4½ mi sw of McAllen, abnd 8695 ft.

McMullen County—Tybro Roy. Corp.'s First Nat. Bank of Commerce 1, 467 ft s line, 990 ft w line of 596 ac tr, sec 40, blk 8, J. Poitevent sur, 5 mi se Tilden, abnd 1225 ft. Tybro Roy. Corp.'s Martin 1, 467 ft n line, 990 ft e line, H. L. Williams sur 18, 5 mi se Tilden, abnd 1219 ft.

Starr County—Royal O&G Co.'s Juarez 1, 466 ft n and e lines of blk 9, McBride subd, 5100 ac tr, share B & C, Santa Teresa gr, 7250 ft n line and 466 ft e line of gr, 6200 ft w and s of Kelsey Pool, comp est 25 to 50 bpd, distillate, ⅛ ch, 1900 tp, 1050 cp, perf 4675-80, sds 4510-38, 4671-89, 4800-25, 5587-5603, 7-in csg 4728, td 5638 ft.

Webb County—O. W. Killam's Puig Bros. 1, 330 ft n and w lines, blk 39, Edgington sur of Puig Brothers Ranch, Los Albercas gr, 2 mi e Aviator field, abnd 2563 ft. Starrett & Leighty's Adami 1, 893.5 n'ly n line, 1212.5 e'ly e line of 106.4 ac lse, share 8, sec 9, 3189 ft n line, 93 ft w line of sur 336, 3 mi sw of Adami field, 18 mi nw of Freer, abnd 1328 ft.

TEXAS GULF COAST

FIRST REPORTS

Ft. Bend County—Tide Water's Armstrong 1, Needville area, 3713 ft fr se line and 5571 ft fr ne line of J. Scott survey, lcn.

Grimes County—Session et al's Barry 1, 466 ft out of swc of 160-ac tract, S. Fulton sur, lcn.

Matagorda County—Deep Rock's Petrucha, sw of Wadsworth, 468 ft n of s line and 2444 ft e of most southerly swc of 550-ac tract, F. W. Dempsey sur, lcn.

COMPLETIONS

Galveston County—Standard of Texas' State 1-234, Galveston Bay, 440 ft fr nw line and 440 ft fr sw line of tract, abnd 7716 ft.

Jefferson County—Fidelity Oil & Royalty Co.'s Craigen 1, se of Hampshire, 445 ft fr n and 490 ft fr w line of 320-ac tract, T. & N. O. No. 146, abnd 9412 ft.

WYOMING

COMPLETION

Carbon County—Albert Development Syndicate's Boeke 1, sw nw 18-25n-79w, abnd 954 ft.

House halts public funds use to influence legislation

Moving to prevent a repetition of broadcasts by the United States Department of the Interior depicting alleged waste in the oil industry, the House of Representatives has adopted an amendment to the Department's appropriation bill prohibiting use of any funds for radio activities designed to influence legislation.

The oil programs, a series bitterly criticized by the industry as designed to line up public opinion behind the federal oil control bill, were broadcast last year following introduction of the legislation.

Under fire from members of the House who charged he was attempting to dictate the legislation which should be enacted, Secretary Ickes was defended by Representative William P. Cole, Jr., of Maryland, chairman of the Interstate Commerce Subcommittee in charge of the oil measure, who assured his colleagues that the oil broadcasts were deplored by members of the subcommittee and that they had absolutely no effect in influencing the views which will be set forth in the report it will shortly make to the full committee.

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MOLY

NOTES FOR THE Equipment Buyer and User

Casing Spider

BYRON JACKSON COMPANY

A new split-type casing spider with a rated capacity of 300 tons has been anounced by Byron Jackson Company, Los Angeles, California. Made of alloy steel completely heat treated, it has a strong hinge pin joining the two halves of the body in the rear. In the front, on one-half of the body, is a stirrup-type latch, similar to an elevator latch, that fits over large lugs on the other half of the body. It is double-locked in the closed position by a latch lock.

Casing is supported in the spider by 4 slips, each slip being 18 inches in length. The teeth of these slips are designed and cut to grip the pipe uniformly without crushing or bottle-necking the casing. The four slips are balanced in normal operation and automatically move into gripping position.

The slips have a flat back to provide the same gripping action regardless of their vertical position in the body of the spider. A top guide plate with slips of corresponding size prevents the casing from dragging across the face of the slips when running in.

Operation of the casing spider is accomplished by moving a single lever which opens all four of the slips simultaneously. When running casing, a member of the crew holds the lever in a lowered position so the slips are retracted and not engaged on the pipe. In the event a falling object, or similar accident necessitates the crew hurriedly leaving the derrick floor, the slips set instantly when the operator releases the lever. The automatic feature prevents the possibility of dropping the string of casing. A lock is provided for keeping the slips up in the retracted position, if desired.

When the slips are in engaged position, a lug on the end of the operating lever drops into a slot in the latch, providing an additional lock and making it impossible to open the latch while the slips are supporting the casing. The slips must be in the retracted or non-gripping position before the latch can be opened. When the latch is released and the spider is opened, a trip holds the slips in non-gripping position.

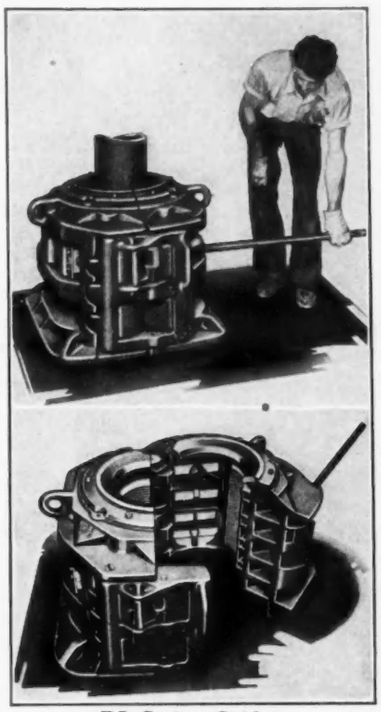
The spider accommodates all sizes of casing from 5 inches to 13⅜ inches A.P.I. by changing the slips, accomplished by removing one bolt which holds each slip in place.

Hose Coupling

THE INTERNATIONAL METAL HOSE COMPANY

A new re-attachable coupling for synthetic gasoline hose, designated "Uni-Flo," has been announced by The International Metal Hose Company, Cleveland.

The body and serrated tube of the coupling are a one-piece drop-forging of hard, dense, non-porous metal designed to withstand wrench abuse and rough usage. The coupling can be readily detached and re-attached, only a bench vice and a wrench being needed for the purpose.



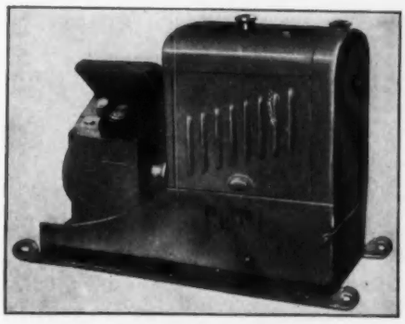
BJ Casing Spider

Generators

NOVO ENGINE COMPANY

A new line of oil field generating sets has been announced by Novo Engine Company, Lansing, Michigan. The sets, portable with sturdy steel skids with end loops are furnished on trucks, can be equipped with combination gas and gasoline carburetor. The outfit is described as completely weatherproof with a cover over the switchboard.

The generators are supplied in fifteen different sizes powered with air- or water-cooled gas and gasoline engines or by Diesel units. National Supply Company handles the sales and services on Novo equipment in the oil fields.



Novo Generator

Tubing Head

McEVOY COMPANY

A new high pressure tubing head featuring a special hanger to permit running and landing of tubing through the Christmas tree has been announced by McEvoy Company, Houston.

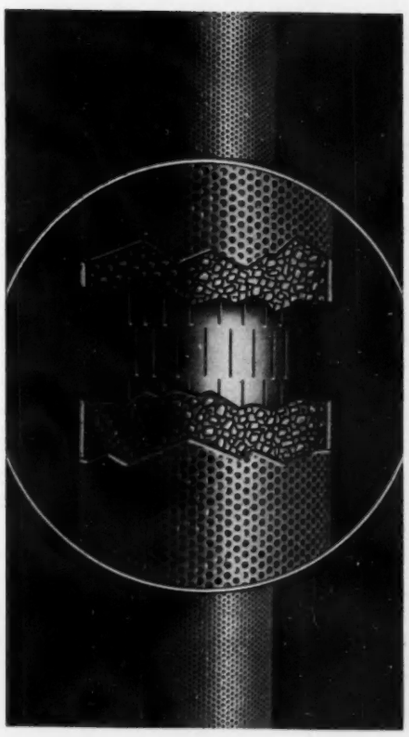
The new head, designated ATSC Tubing Head, can support the longest strings of tubing safely, according to the manufacturers. It saves time at a critical period during completion because tubing collars and hanger nipple may be run through Christmas tree under full pressure control at all times. Tubing may be raised any amount off bottom after setting packer and locked in place by means of set screws in the flange of the head.

Extra thick oil resistant packing is used to insure a perfect seal between strings at all times. Should reworking become necessary, the tubing head bonnet can be removed and blowout preventers installed for complete removal of tubing. The new head is available to 10,000 pounds test pressure.

Gravel-Packed Liner

PACIFIC PERFORATING COMPANY

For controlling entrance of sand into the oil string, Pacific Perforating Company, Torrance, California, has recently introduced a prepacked gravel liner that incorporates many new construction and engineering features.



Pacific Gravel-Packed Liner

This liner is made under an entirely new process in which perforated steel sheeting is rolled to exact size and

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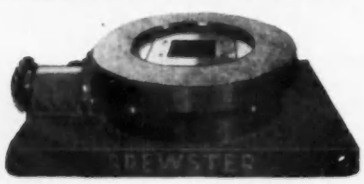

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NOTES FOR THE Equipment Buyer and User

welded, forming a strong steel tube with more actual open area per square inch than ordinary screens. Extra strong construction assures against collapse and provides for rigid alignment in the hole even under severe conditions. The large open area gives increased permeability for maximum oil recovery. The smooth outer surface of the screen makes installation as easy as running solid pipe, and perfect roundness maintained at every point practically eliminates chance of tearing or catching the screen and the inner slotted pipe is prepacked with gravel of any desired size. This filtering area reduces sand content of the oil to a minimum, helps prolong pump life and increases recovery efficiency.

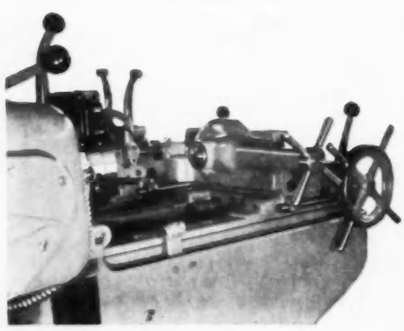
The company manufactures prepacked gravel liners in all popular lengths and diameters, ready for installation. The liners can also be made to meet special well conditions, if desired.

Carriage Front

LANDIS MACHINE COMPANY

Landis Machine Company, Waynesboro, Pennsylvania, has announced a new type of carriage front which can be used on either its Landmaco or Landis standard threading machines.

It is provided with a collet holding device of the type usually employed on



Landis Carriage Front

automatic screw machines. The collet chuck is actuated by a handwheel, located so that it occupies approximately the same position as the handwheel of the standard carriage front. An operator can easily accustom himself to the new type of chuck in a minimum of time.

Separate collets are employed for each diameter of work, and they can be interchanged readily.

Spray Gun

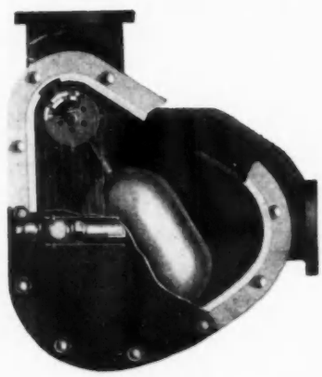
BINKS MANUFACTURING COMPANY

Binks Manufacturing Company, 3114 Carroll Avenue, Chicago, has designed a small paint spraying outfit, the Roche single diaphragm, for light jobs. The compressor delivers 2.2 CFM at 26 pounds working pressure to an especially designed gun.

Drainer

COCHRANE CORPORATION

Cochrane Corporation, 17th Street and Allegheny Avenue, Pittsburgh, has announced a drainer that functions as a large capacity trap with the additional feature that flow of condensate is continuous rather than intermittent. Its application is to closed heaters, evap-



Cochrane Drainer

orators, continuous blow-off flash tanks and equipment where large quantities of liquid must be continuously drained.

The valve mechanism consists of a balanced rotary type valve, with large port area, located in the condensate chamber and operated by a float. The discharge of condensate is controlled in accordance with float position.

Metal Packing

France Packing Company, Tacony, Philadelphia, Pennsylvania, has issued a 44-page catalog featuring improved types of metal packing for the oil, gas and general industrial field.

Designated Catalog "M," it shows various designs of full-floating ring metal packing for piston rods and valve stems in any type of engine, pump or compressor.

Carbide-Tipped Tools

A practical guide for the care and use of carbide-tipped tools is given in a new 32-page catalog of McKenna Metals Company, 224 Lloyd Avenue, Latrobe, Pennsylvania.

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Air · Gas · Water
REPRESSURING
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CONTROL OF FLOW THRU FORMATION
REGISTERED PROFESSIONAL ENGINEERS

NOTES FOR THE Equipment Buyer and User

Casper A. Ruf Named President Parkersburg Rig & Reel Company

The board of directors of the Parkersburg Rig & Steel Company have elected Casper A. Ruf president and general manager, succeeding David B. Crawford, resigned.

Ruf has served the company as vice president and general manager since February 13, 1934, having started with the corporation over 20 years ago. Crawford will continue as a director.

Other officers elected were John M. Crawford, board chairman; Harold D. Crawford, vice president, and Bernard M. Farson, secretary and treasurer.

Thompson Named Chicago Sales Manager for Babcock & Wilcox

Joe S. Thompson has been appointed district sales manager in the Chicago office of The Babcock & Wilcox Tube Company, Beaver Falls, Pa. Thompson has been in the employ of the company since 1934, and was transferred to Chicago as a salesman in 1937.

Dralle Named to Westinghouse Petroleum and Chemical Post

Appointment of H. E. Dralle as manager of the petroleum and chemical section of the Industry Engineering Department of Westinghouse Electric & Manufacturing Company has been announced by C. A. Powel, department manager.

Born in Quincy, Illinois, and graduated as an electrical engineer from University of Illinois in 1916, Dralle has since been associated with the company. He has specialized in the application of electricity to oil, cement, glass and railroad industries. His experience includes 22 months of inspecting major oil fields of Europe and 5 months' study of fields in Mexico.

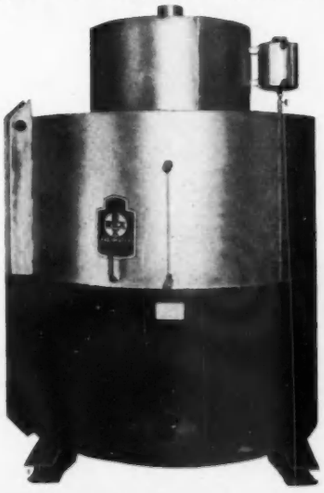
CASPER A. RUF
President and General Manager
The Parkersburg Rig & Reel Company

H. E. DRALLE

REX PRE-HEATER

Planning a Wildcat?

A Rex Pre-Heater will save you 25% on fuel . . . an important item especially when it is necessary to haul fuel oil to the location. See pages 2146-2147 of your Composite Catalog for complete details.



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The Continental Supply Co.
California Distributor: The Howard Supply Co.

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DRILLING BIT

THE INDUSTRY'S MOST ECONOMICAL DRAG TYPE BIT

with
REPLACEABLE DROP FORGED HEAT TREATED BLADES
for
LONGER LIFE
FASTER HOLE
MORE HOLE PER BIT

REED ROLLER BIT COMPANY

MacCLATCHIE

"Money-Saver"
PUMP LINERS

. . . are made by an exclusive process from special alloy seamless tubing and ground to a mirror finish. Absolutely uniform in extreme hardness, **these liners have no soft spots to h a s t e n breakdown or cause pitting!**

And here's another important point — the wear-free gland used with "Money-Saver" Pump Liners can be quickly slipped off the worn liner and placed on the new one. Thus, you save on both shipping costs and maintenance costs —buying **only the liner itself** (without glands) when renewing MacClatchie "Money-Savers!"

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MacCLATCHIE MANUFACTURING CO.
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Mid-Continent Distributor, BAKE TOOL COMPANY, Houston, Texas
Rocky Mountain Representative, E. C. DILGARD, Casper, Wyoming
Foreign, GEORGE R. WOODS, 17 Battery Place, New York, N. Y.

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by

C. A. WARNER

Petroleum Engineer and Geologist
Houston Oil Company

This book combines the rich, human interest features of the oil and gas industry in Texas since its beginning with the cold, statistical facts revealed in the more than 150 pages of tabular matter included.

In view of the ever-increasing importance of the oil and gas industry of the State of Texas and the fact that the number of pioneers of this industry is decreasing from year to year, it has been deemed advisable to present a history of the industry in this State, based on authentic information and prepared for ready reference.

To this end, years of time have been devoted to the collection and authentication of data from all reliable sources and to the compilation in compact form of the information thus secured.

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HOUSTON, TEXAS

NOTES FOR THE Equipment Buyer and User

May Succeeds Hough As Darling Valve Sales Manager

Stephen C. May has succeeded M. L. Hough as general sales manager for Darling Valve & Manufacturing Company, Williamsport, Pennsylvania. May was formerly manager of industrial accounts for Iron Fireman Company, and more recently eastern manager for G. S. Blakeslee & Company.

Irwin Named Timken Chicago District Manager

Appointment of Jay Irwin as Chicago District Manager of the Steel & Tube Division of The Timken Roller Bearing Company has been announced by company officials.

Irwin was born in Urichsville, Ohio, attended Blair Academy at Blairstown, New Jersey, and did graduate work at University School, Cleveland, Ohio, after which he joined Canton Sheet Steel Company in 1919. He was later employed by Milwaukee Rolling Mill Company and Inland Steel Company, Chicago. In 1937, he became associated with the metallurgical department of The Timken Roller Bearing Company, and since October, 1937, he has been a salesman in the company's Chicago branch office.

Hayes Named General Sales Head for Coffing Hoist Company

Coffing Hoist Company, Danville, Illinois, has announced appointment of Harry N. Hayes as general sales manager. He has been with the company as district sales manager and has a wide experience as a salesman and engineer.

Hayes, at the left in the accompanying picture, is shown explaining to F. L. Dwiggins, southern district sales manager, the proper manner in which to demonstrate the company's safety-pull ratchet lever hoist.

Harry N. Hayes and F. L. Dwiggins of Coffing Hoist Company

STEPHEN C. MAY
Named General Sales Manager for Darling Valve & Manufacturing Company

Otis Pressure Control Builds New Office-Shop Building

Otis Pressure Control now occupies new headquarters at 6612 Denton Drive, Dallas, making the first time the company's offices and shops are coordinated into one group. Offices are housed in the front buildings, and the machine shop and stock room in the rear building.

The shop building was constructed to make possible the most precise and efficient workmanship. The maximum amount of window space was built into the structure, making it exceptionally well lighted. Steel compartments for welders protect employees' eyes.

Standco
NO-SMOKE

STANDCO BRAKE LINING

nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 2100 Composite Catalog.

Standco Brake Lining Co.
HOUSTON

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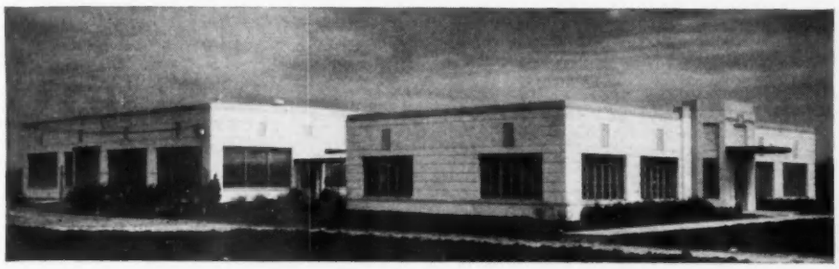

New Otis Pressure Control Building in Dallas

Thermostat controls operate a series of suspended heaters to maintain a constant temperature in the building under all conditions. Steel lockers, tile showers, wash fountains and drinking fountains furnish the employes additional conveniences.

Every tool and machine, as well as the testing equipment, put in the building is new and of the very latest type.

The office building has large windows and the same general modernistic construction as the shop building. It is air-conditioned for summer and winter, and has indirect lighting throughout. A complete blue-print room and fireproof vault were included in the building to handle prints and records.

The company maintains branch offices in Houston, Oklahoma City and Hobbs.

Mallon and O'Connor Tour Texas Fields

H. N. Mallon, president of Dresser Manufacturing Company, Bradford, Pennsylvania, and J. B. O'Connor, vice president of Clark Bros. Company, Olean, New York, have completed a trip through Texas fields during which they inspected recent compressor installations of Clark Bros. Company.

W. H. Richardson Named Timken Assistant General Sales Manager

The Timken Roller Bearing Company has announced appointment of William H. Richardson to the newly-created position of assistant general sales manager.

Richardson has been associated with the company 23 years in various positions, having first served as salesman in the Service Sales Division. He was successively promoted to branch manager, district manager, and later to

Supply Personals

Jay Taylor, Amarillo district manager for Halliburton Oil Well Cementing Company, has been elected president of the Texas and Southwestern Cattle Raisers' Association.

R. P. Proffitt has been appointed Chicago division manager for The Timken Roller Bearing Company. He first served as an engineer in the company's Industrial Bearing Division in 1923. He later worked out of the St. Louis branch office, and joined the Chicago branch in 1933.

David C. Jones, vice president and general manager of The Lunkenheimer Company, Cincinnati, Ohio, died on March 11, after a brief illness. Born in Cincinnati on November 14, 1876, he entered the employ of The Lunkenheimer Company on January 1, 1894. He had served as president of the American Supply & Machinery Manufacturers' Association.

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if a clogged screen is choking production in an otherwise profitable well. The Cavins Washer is **fast, positive, safe** and **economical.** Cavins Washing Service is as close as your telephone . . . Call

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Vapor Control Equipment!

Raises Gravity!
Reduces Corrosion!
Economical!
Positive and Safe!
Convenient Inspection!
Automatic Operation!

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Enardo Foundry & Mfg. Co.
2729 Sand Springs Road Tulsa, Oklahoma

CORE AND SHOT HOLE DRILLING CONTRACTORS

"For Better Cores" . . . see Failing . . . Experienced operators and improved equipment save you money on all types of exploration drilling . . . oil, sulphur, and other minerals.

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Made of strong kraft paper, tightly sealed to eliminate leaks. Top end folds over with easy twist and holds contents securely. Most economical for sending and filing of sand samples. Phone, write or wire for our low prices.

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T. B. Rendel, formerly director of automotive research for Shell Oil Company and now technical aviation director for Asiatic Petroleum Company, London, covered the subject of "Diesel Fuels"; H. V. Hume, superintendent of the refinery department, The Atlantic Refining Company, developed the discussion on "Fuel Oils (Other Than Diesel)"; and "The Status of Research on Fuels and Lubricating Oils for Spark-Ignition Aircraft Engines" was written by S. D. Heron, research engineer for Ethyl Gasoline Corporation.

Each paper includes a number of detailed references which add to the value of the publication. Copies of the 52-page booklet can be obtained from the American Society for Testing Materials, 260 South Broad Street, Philadelphia, at 75 cents each.

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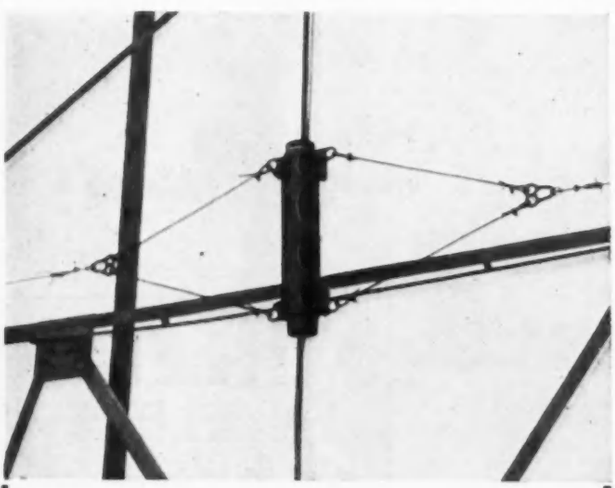

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No splinters falling on the Crew. No wire line "jitters." No traveling wave. With the Patterson-Ballagh Wire Line Guide fatigue is reduced. Proper spooling is assured. Try it and note the saving. Spark-proof. See Composite Catalog.

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New York City: 39 Cortlandt St.

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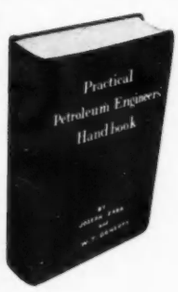

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Squeaks from the Bull Wheel

Shake

"I never was arrested in my life."

"I don't drive a car, either."

Almost an Outsider

So you have two sets of twins in your family, Bobby? My, my; what a wonderful family. And are you one of the twins?

Naw; I'm just a spare.

Ahem!

Bobby had just finished a big day. It was his ninth anniversary, and among the gifts was a $10 bill.

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"No, sir, I am going to give it to father so as to help him pay the next instalment on his!"

Stopped Cold

The professor seemed greatly irritated at the action of a student. "Listen here, young man, are you the professor of this class?"

"No, sir, I'm not."

"Well, then, stop acting like a fool!"

Especially the Last

"Name the solids."

"Mineral, vegetable, geometry, and comfort."

Out of Form

"The star of this floor show is Salley Shapely, an eccentric dancer."

"An eccentric dancer—what does she do?"

"She dances with her clothes on."

Change of Pace

"Is that tiny piece of cake for me, Ma?"

"No, that's for your little brother."

"What! All of that for him?"

Framed

I'll sell you that picture for $50.

No you won't. But I'll give you $10 for the address of the model.

Special Delivery

"Here, Tommy," said Mrs. Jones to her neighbor's little boy, "run along and put this parcel on the bus."

"Which bus?" asked the lad.

"Any bus," replied Mrs. Jones. "It's me husband's lunch, and he works in the London Transport lost property office."

A Little Smoothie Herself

"Mother," said little Jane, "may I go out and play?"

"You may play with little girls," said her mother, "but not the boys, they're too rough."

"But, mother," said little Jane, "If I can find a nice smooth little boy, may I play with him?"

A New Version

"Say, Buddy, can you let me have a dime for a glass of milk?"

"I though milk was only a nickel."

"Yeah, but I have a date."

The Come-Down

"Please, sir, might I have tomorrow afternoon off?"

"Ah, yes; your grandmother, I suppose?"

"Exactly, sir; she is making her first parachute jump."

Could Afford to Sell Them Cheaper

"But if it costs $20 to make these watches and you sell them for $20, where does your profit come in?"

"That comes from repairing them."

Base Insult

Now, Mrs. Murphy, will you tell the jury why you hit this gas man with the mop handle?

Shure, yer honor, and I had reason to. Didn't he call me an occupant? No silf-respectin' woman wud stand for bein' called such a name, yer honor.

Spoken From Experience

Sammy, can you tell me who is the speaker of the house?

At our house it's Ma, mostly.

Paid for Writing

You say your son is making his way through college writing?

Yes; writing home for money.

Just the Thing!

He was showing a friend around his ultra-modern house.

"Why the round hole in the front door?"

"Oh, that's for circular letters."

The Little Courtesies

"Now, Billy dear, what will you say at the party when you've had enough to eat?"

"Good-by."

Ahem!

"I've had no luck with that girl. I've passed her every day for the last week—and she hasn't smiled once!"

"Some women have no sense of humor."

Anxious to Please

Two eggs, please. Don't fry them a second after the white is cooked. Don't turn them over. Not too much fat. Just a small pinch of salt on each. No perper. . . . Well, what are you waiting for?

The hen's name is Betty. Is that all right, sir?

Color Blind

"There's only one thing wrong with me, blondie, I'm color blind."

"You-all sho' mus' be, mistah."

Double Crossed

"You look broken up. What's the matter?"

"I wrote home for money for a study lamp."

"So what?"

"They sent the lamp."

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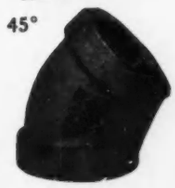
HEAVY OIL MALLEABLES
...pay dividends
in freedom from pipe line trouble



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For 300 pounds Working Steam Pressure and for cold, Non-Shock Working Oil, Water or Gas Pressures as follows: 1" and smaller . . . 2000 lbs.; 1¼" to 2" . . . 1500 lbs.; 2½" to 4" . . . 1000 lbs.; 6" . . . 800 lbs.

Full range of sizes available in Black or Galvanized finish.

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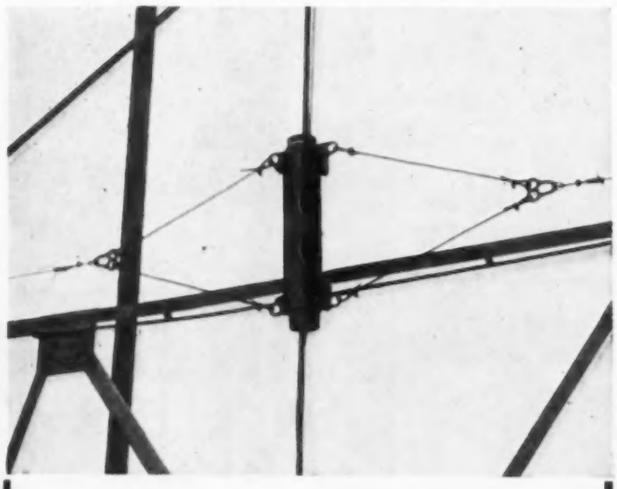

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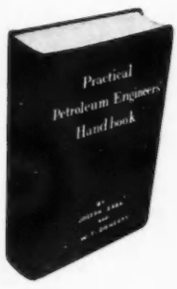

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Change of Pace

"Is that tiny piece of cake for me, Ma?"

"No, that's for your little brother."

"What! All of that for him?"

Framed

I'll sell you that picture for $50.

No you won't. But I'll give you $10 for the address of the model.

Special Delivery

"Here, Tommy," said Mrs. Jones to her neighbor's little boy, "run along and put this parcel on the bus."

"Which bus?" asked the lad.

"Any bus," replied Mrs. Jones. "It's me husband's lunch, and he works in the London Transport lost property office."

A Little Smoothie Herself

"Mother," said little Jane, "may I go out and play?"

"You may play with little girls," said her mother, "but not the boys, they're too rough."

"But, mother," said little Jane, "If I can find a nice smooth little boy, may I play with him?"

A New Version

"Say, Buddy, can you let me have a dime for a glass of milk?"

"I though milk was only a nickel."

"Yeah, but I have a date."

The Come-Down

"Please, sir, might I have tomorrow afternoon off?"

"Ah, yes; your grandmother, I suppose?"

"Exactly, sir; she is making her first parachute jump."

Could Afford to Sell Them Cheaper

"But if it costs $20 to make these watches and you sell them for $20, where does your profit come in?"

"That comes from repairing them."

Base Insult

Now, Mrs. Murphy, will you tell the jury why you hit this gas man with the mop handle?

Shure, yer honor, and I had reason to. Didn't he call me an occupant? No silf-respectin' woman wud stand for bein' called such a name, yer honor.

Spoken From Experience

Sammy, can you tell me who is the speaker of the house?

At our house it's Ma, mostly.

Paid for Writing

You say your son is making his way through college writing?

Yes; writing home for money.

Just the Thing!

He was showing a friend around his ultra-modern house.

"Why the round hole in the front door?"

"Oh, that's for circular letters."

The Little Courtesies

"Now, Billy dear, what will you say at the party when you've had enough to eat?"

"Good-by."

Ahem!

"I've had no luck with that girl. I've passed her every day for the last week —and she hasn't smiled once!"

"Some women have no sense of humor."

Anxious to Please

Two eggs, please. Don't fry them a second after the white is cooked. Don't turn them over. Not too much fat. Just a small pinch of salt on each. No perper. . . . Well, what are you waiting for?

The hen's name is Betty. Is that all right, sir?

Color Blind

"There's only one thing wrong with me, blondie, I'm color blind."

"You-all sho' mus' be, mistah."

Double Crossed

"You look broken up. What's the matter?"

"I wrote home for money for a study lamp."

"So what?"

"They sent the lamp."

DEVLIN

HEAVY OIL MALLEABLES

...pay dividends

in freedom from pipe line trouble

45°

90°

ELBOWS and TEES

For 300 pounds Working Steam Pressure and for cold, Non-Shock Working Oil, Water or Gas Pressures as follows: 1" and smaller . . . 2000 lbs.; 1¼" to 2" . . . 1500 lbs.; 2½" to 4" . . . 1000 lbs.; 6" . . . 800 lbs.

Full range of sizes available in Black or Galvanized finish.

FRETZ SEAMLESS NIPPLES

Made from new high quality tested seamless tubing . . . accurately threaded . . . carefully reamed. Standard, Extra heavy, Double Extra heavy. Black or Galvanized. Shipped with Distinctive Devlin Thread Protectors.

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Complete stock (including Standard, Malleable and Cast Iron Fittings and Nipples) always carried by J. E. Bobo, 2120 Rothwell Street, Houston, Texas, and at the factory.

WRITE FOR CATALOG 15-A.

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